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A GROUP OF REMODELED HOUSES ON MADISON AVENUE, NEW YORK
FREDERIC R. KING, *ARCHITECT*

A Notably Good Example of the Alteration Movement in New York

IF in the Seventies there was a revolt, as Mrs. Wharton says in her new novel, "The Age of Innocence," against brown stone, "of which the uniform hue coated New York like a cold chocolate sauce" we now see the fruits of revolution. The long, unbroken rows of high-stooped brownstone houses have very nearly disappeared and in many a block only an old fashioned front or two drawing back from building line between its pushing new stucco or brick neighbors remains to mark the despised period of the hated material. But, in justice to brown stone, it should be said that its unpopularity today is due far more to the architecture associated with it than to its depressing color; to ill proportioned and badly spaced openings overladen with distorted mouldings and decoration, to cornices of rusty tin tortured into hideous brackets or modillions, to the forbidding steepness of towering stoops with their wood or cast iron sanded balusters, rather than to the stone itself. The Villard Houses on Madison Avenue and Fiftieth Street, an early work of Messrs. McKim, Mead & White, prove that brown stone is in no sense a bad medium for good design. Stucco or paint cannot, as must sometimes be thought by decorators, disguise bad proportions and ugly ornament; one must remove all the "architecture" which the original builders applied after their hurried and ill digested study of photographs (new in the 70's) of the old world and get plain surface before any real "improvement" can be made.

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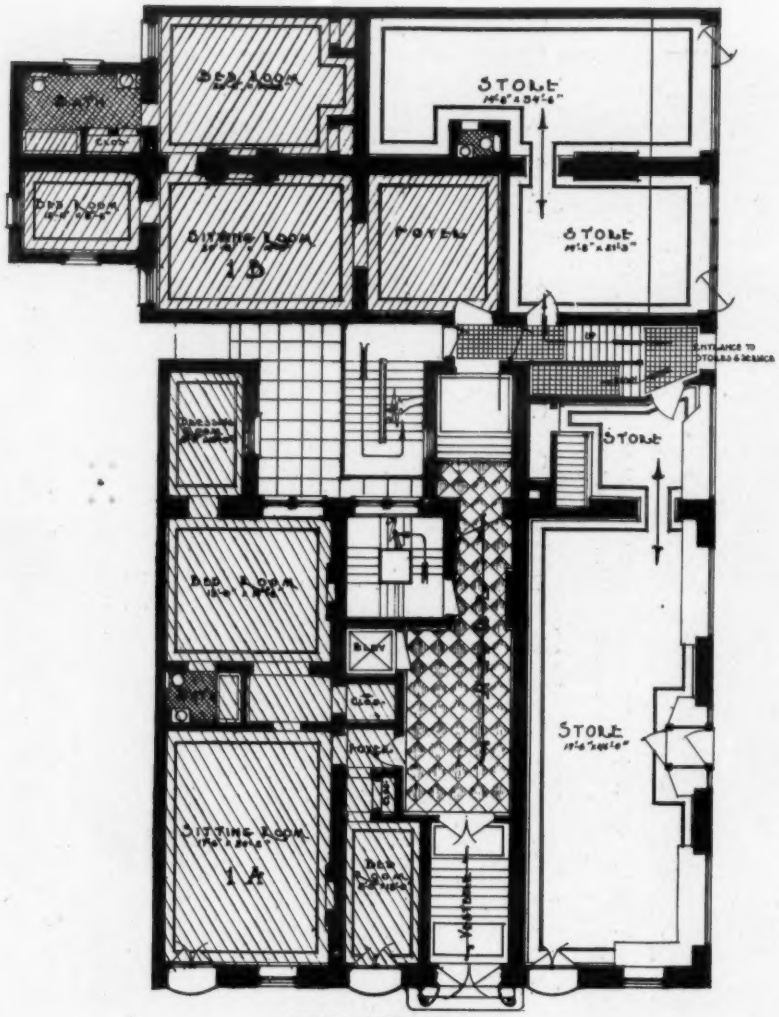
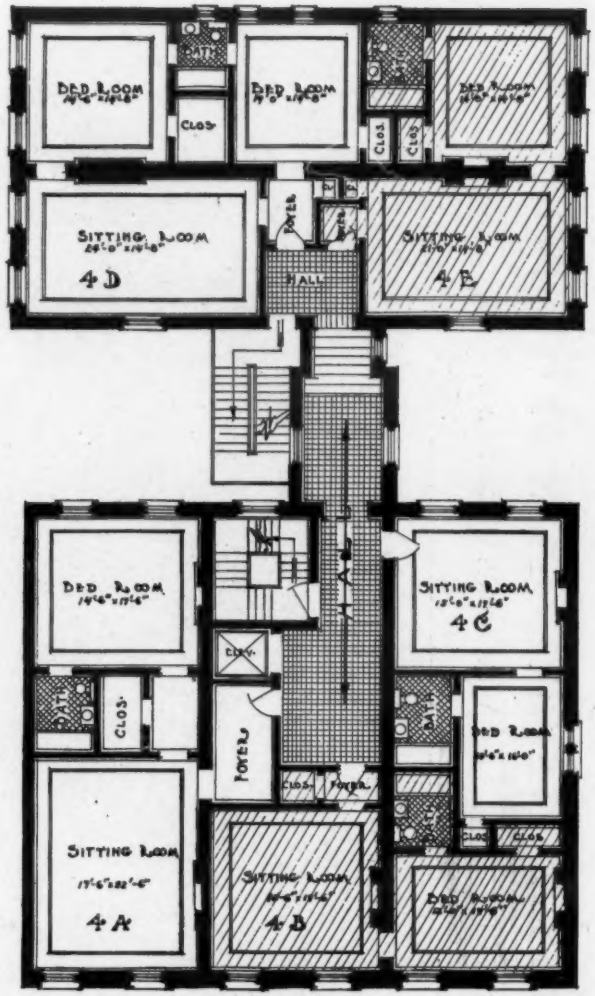


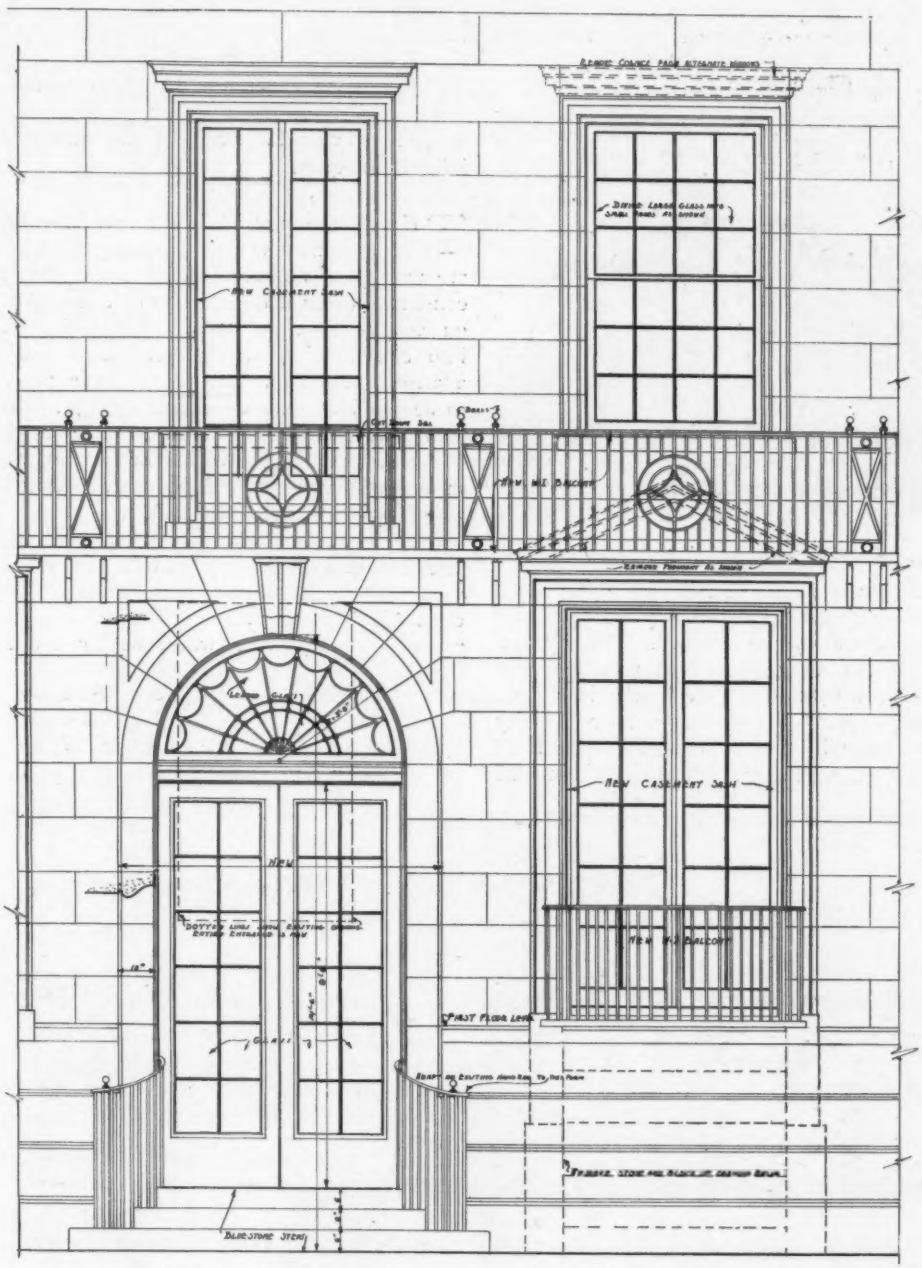
FIRST FLOOR PLAN



TYPICAL PLAN

A GROUP OF REMODELED HOUSES ON MADISON AVENUE, NEW YORK

FREDERIC R. KING, *ARCHITECT*



·¾·INCH·SCALE·DETAIL·OF·ENTRANCE·MOTIVE·

·ALTERATIONS·TO·29-33·EAST·63ᴿᴰ ST.·&·1118-1122·MADISON·AVE·
FOR THE 27 EAST 63ᴿᴰ ST. CORP.·· N·Y·C·

FREDERIC R. KING, ARCHITECT

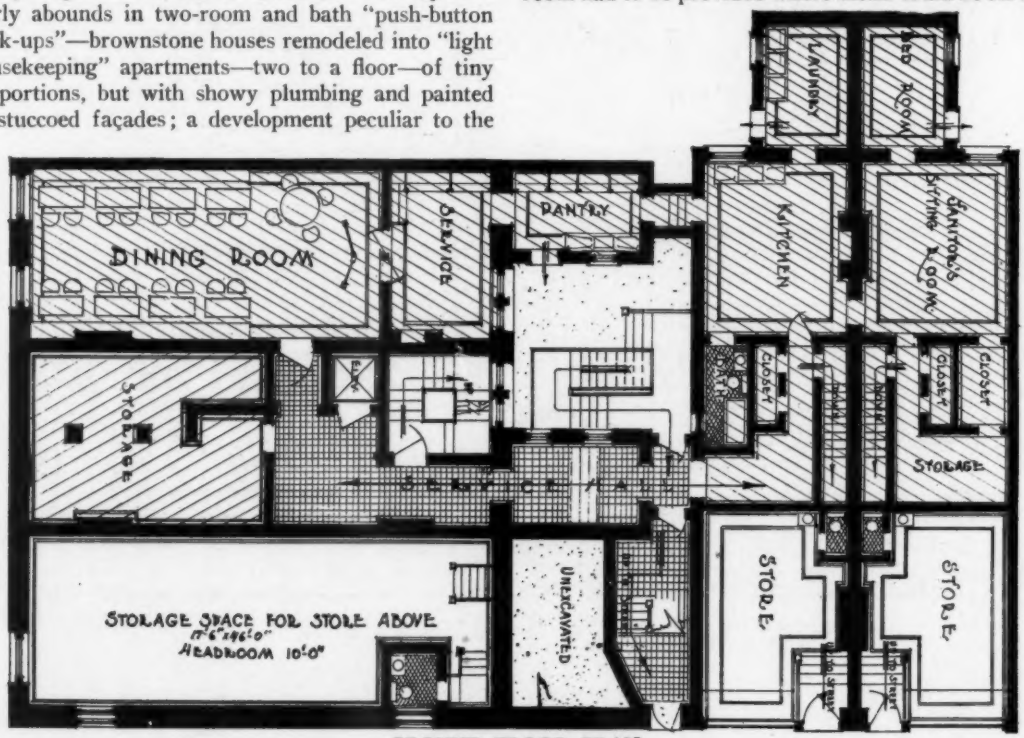
XUM

The present day high prices resulting from the war have restricted building, and the consequent housing shortage has brought about an era of high rents. Property owners, who, for years in the past, scarcely received enough rents to cover taxes, now find themselves able to get a fair return on their real estate by converting dwelling houses into offices or flats. Therefore, since the armistice we have seen in New

THE HOUSES BEFORE ALTERATION

York great activity in the field of alterations to old fashioned houses, where for a comparatively small outlay large returns can be obtained. The city now fairly abounds in two-room and bath "push-button walk-ups"—brownstone houses remodeled into "light housekeeping" apartments—two to a floor—of tiny proportions, but with showy plumbing and painted or stuccoed façades; a development peculiar to the crisis of the day when tenants will live literally anywhere. Many people of moderate means, unable to meet doubled rents, have bought small houses in unfashionable districts and have altered them into basement entrances which show considerable ingenuity in planning and, in most cases, good taste. Communities have been developed with great success, and much can be hoped for in the future if the movement is continued with the intelligence and skill with which it has been begun.

THE alteration which is illustrated herewith presents some new and interesting features which are worthy of notice. Briefly stated, the problem consisted in converting a group of five houses, three on Eighty-third Street and two on Madison Avenue, into one building of seventeen non-housekeeping apartments served by one main entrance; stores had to be provided on the avenue frontage: differences in floor levels had to be reckoned with and economy of space carefully studied. The owners wished to make an improvement of permanent value, looking to the future rather than exclusively to the present and, therefore, insisted that all rooms should be large sized and generously supplied with windows. An elevator had to be put in and two fireproof stairways and connecting fireproof entrances built. A large dining room had to be provided where meals could be served



GROUND FLOOR PLAN

by the resident caterer and provision for high-class service made with a view to lessening the servant question. How the solution of this program's problems was found can be seen on the accompanying plans.

SIMPLIFICATION has been the keynote in the treatment of the exterior and by the elimination of strikingly objectionable features the unhappy restlessness of the original facade has been relieved, and continuity attained, particular study and attention being given by the architect to the ground story, which may be said to be the most important portion to consider in an expensive alteration. On Madison Avenue the store fronts were entirely remodeled with large show windows of agreeable proportions, while the side street elevation was kept strictly residential in character. Use was made of a graceful Colonial iron balcony, stretching across the front to accentuate the importance of the ground story by a heavy horizontal shadow, and thus obtaining a simple, dignified effect. The badly designed, heavily decorated, bracketed tin cornice was removed, and a flat band and a parapet of artificial stone introduced in its place as a crowning member. A new arched entrance, flanked by the former doorways now treated with curved balconies forms the central motive, a detail of which is given among the illustrations. In short, though no radical or extensive change has been made, a glance at the photograph of the original group of buildings and the perspective drawing will suffice to show the new character which a few simple expedients, intelligently handled, will produce.

Oldfashioned brownstone houses, it might be said in conclusion, are often adaptable to modern uses; are in general solidly constructed, and even possess in some ways advantages (such as high ceilings and a profusion of open fireplaces) over more modern buildings. They are never very high—their height is usually not quite equal to the width of an ordinary side street—and are not apt to cover a very large percentage of the lot. New York has already gained much, artistically, from the present commendable "alteration movement"; and if hitherto neglected but potentially attractive sections are improved and developed, the increasingly difficult problem of finding convenient and agreeable modern living quarters at moderate cost will be satisfactorily solved, and the city immeasurably benefited.

Builders' Arcades

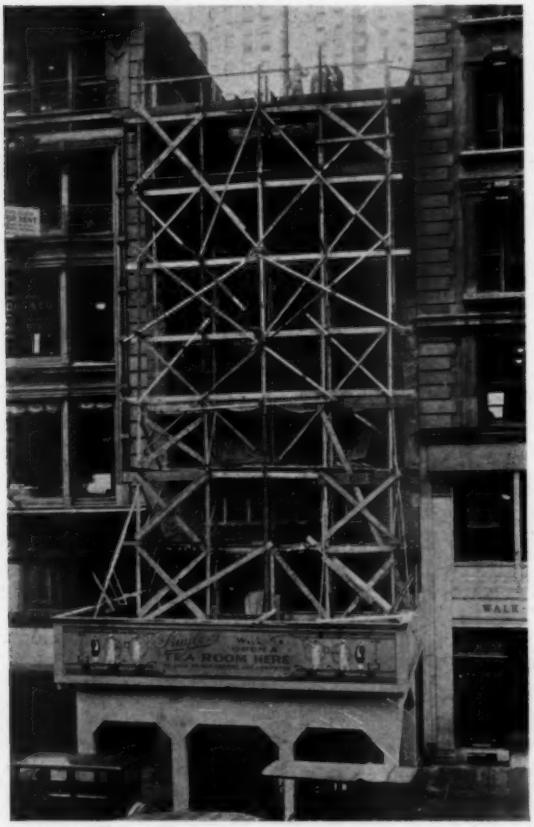
THE Building Code of New York City requires that "wherever any building or part thereof within ten feet of the building line is to be erected or raised to exceed forty feet in height or wherever such a building more than forty feet in height is to be demolished, the owner or person causing such work to be done shall erect and maintain during such work a substantial shed over the sidewalk in front of the building extending as far as practicable from building line to curb." The primary object of such a shed is, of course, to protect the public from injury during the construction of the building. Contractors also use the roofs of these structures as convenient places to store materials which formerly encumbered the sidewalk and part of the roadway.

Fundamentally the shed consists of a series of posts set at the curb line, on which rest girders braced to the posts and carrying the overhead planking. As a further means of protection against injury a parapet is often built on the three exposed sides of the shed, high enough to conceal the materials stored on the platform and to prevent material from falling on the passers below. This combination of structural elements, properly calculated for the strength required, and without further adornment, satisfactorily meets the requirements of the Building Code.

It has become a general custom in erecting these sheds, to plan advertising space wherein to acquaint the public with the advantages of the building under construction, sometimes adding a list of the tenants who have contracted for space and often adding a perspective of the proposed building painted more or less faithfully. The builder usually takes advantage of the opportunity presented to display his business announcement in a conspicuous manner. To receive such advertisements the parapet is usually enlarged and treated similarly to the justly criticized billboard fence.

IN the past few years architects have brought a great many owners to the realization that these sheds, if property treated, can be made into attractive bits of design and a powerful means of focusing public attention upon the work under construction. Owners have been shown that it is as much to their interest to erect sightly temporary structures as it is to erect a well designed building and that it is their civic duty to prevent, as far as it lies within their power, the erection of even temporary structures that are offensive to the public eye. A coat of paint, a paneled parapet, lattice work, trellises and other

decorative embellishments have helped to make many of these purely utilitarian structures features of architectural interest. More properly to describe them, the term "builders' arcades" has been applied to these structures and has come to be generally accepted in designating them.



AN ARCADE POSSESSING GOOD DECORATIVE FEATURES

In designing some of the arcades seen today or that have already served their usefulness and been removed, architects have shown careful study in the grouping of the parts, the disposition of the panels, the placing of decorative motifs and in the general appropriateness of the design. Examples are occasionally met with where the decoration of the adjoining building has suggested the scheme of treatment. The arcade at No. 606 Fifth Ave., illustrated herewith, is of this type. Adjoining the structure under erection is a one time private mansion now occupied as a florist's establishment. The front of this building has been enlivened by painting the lower stories green, the upper part white and the roofs vermilion. and by placing large growing plants at all window openings and at other points of advantage. To carry out this scheme of decoration, John H. Duncan, the architect of the new building, designed an arcade painted green in harmony with the lower stories of the florist's building, and with hanging plants placed in such positions as to give the arcade the appearance of being part of the adjoining building. A simple balustrade projecting above the foliage adds an effect of the gardener's art that is particularly pleasing. This arcade, although designed with great simplicity, is so well thought out that were it not for the contractor's house that sets on the platform, one would not suspect that a building operation is in progress at the site.

A VERY interesting example of a small but carefully executed arcade is located at No. 508 Fifth Ave., where a five-story building is being remodeled. Sibley & Fetherston, architects for the alteration, have designed an arcade that is at once practical for the use for which it is required under the Building Code, an interesting architectural work, and

BUILDERS' ARCADE AT NO. 606 FIFTH AVENUE

also a good advertising medium. Here the structural elements were covered with a fitting background provided for the unusually attractive painted sign by means of which a well known firm of confectioners

informs the public of the nature of their occupancy in the remodeled building. Surely this display with its quaint figures painted in bright colors set upon a framework which, though obviously utilitarian is nevertheless artistically attractive, cannot but drive home the message that it is intended to convey to the passersby. Furthermore, there can be no doubt that it will return with interest the money expended upon it.

ONE OF A GOOD TYPE OF ARCADE SEEN ON FIFTH AVENUE

Other examples of builders' arcades which display more or less artistic feeling are to be seen in various parts of the city. Two noteworthy examples are those at 57th St. and Madison Ave., where a building is being erected for the Bankers Trust Company, and at 34th St. and Fifth Ave., where several stories are being added to McKim, Mead & White's Columbia Trust Co. building. In both of these the disposition of the supporting posts and the paneling of the parapets show a well studied endeavor to make something worthwhile of the commonplace. In the 34th St. arcade good use is made of lattice work in working out an interesting design.

The examples mentioned above are some of the more interesting to be met with. There are others equally as interesting and still others showing a more or less successful attempt to achieve the artistic. But by far the majority of builders' arcades show that the architect has not been permitted the same degree of freedom in design that characterizes the buildings in connection with which they are constructed. In most of them the owner is apparently satisfied to comply with the letter of the law and to have the architect call for such a structure in his specifications as will meet the requirements of the Bureau of Buildings. Nevertheless, it is gratifying to note that architects are carrying this movement forward to the point where the owner will find it distinctly to his disadvantage to erect any but a well designed builder's arcade and to note that more and more of the better types of arcades are being erected as owners become convinced that as "a thing of beauty is a joy forever," so may it also be made the best of advertisements.

CO-OPERATING with architects in New York in their efforts to improve the appearance of the city's streets, is an agency of potent influence, an almost unique organization—the Fifth Avenue Association. Fifth Avenue in New York City is concededly the finest retail merchandizing street in the world. The character of its buildings is constanly improving. Its traffic, both pedestrian and vehicular, is probably greater and also better regulated than that of any other thoroughfare. That Association has assumed the responsibility of controlling the aesthetic aspect of this important street. It seems as if it might include in its activities, influencing of every property owner to consider a sightly arcade and thus conserve, during the strenuous period of commercial building

HOW NOT TO DO IT

activities, the appearance of this important thoroughfare. As the matter stands now, the arcades, of which special mention is made in this article, are striking examples of what can be accomplished, but if architect, owner, builder and association will work more harmoniously toward this good purpose, the visitor to New York will be spared views of many unsightly spots that now disfigure Fifth Avenue from 23d St. to 59th St.

The Need for Permanent Housing Boards

THE State of New York in its struggle with its housing problem is in a situation similar to that of a community that confronts an epidemic of disease without a health department or a health officer, writes John Alan Hamilton, Chairman, Housing Committee, New York State Reconstruction Commission, in *The Survey*. In a recent address given at the City Club of New York City, Governor Smith pertinently observed that although the state furnished him with expert official advice on a multitude of subjects bearing on the state's welfare, it had neglected to provide for one of the most important of all, and that he would be at a loss where to turn to obtain authoritative information or responsible counsel on any question relating to the housing of the people of the state.

Governor Smith's reminder was exceedingly timely, directing attention as it did to an omission from the administrative machinery of the state that must be remedied before the subject of housing can receive legislative treatment adequate to its importance or to its complexity. At present New York State is without any department, board, bureau or officer whose duties comprise any study of subjects related to housing or town planning, or whose responsibilities imply the slightest competence to furnish the state with expert advice as to its housing requirements.

When the body politic is suffering from any acute discomfort, legislators, like any other laymen, are apt, in the absence of trusted professional advice, to treat the symptoms instead of the disease. This is precisely what happened at last winter's session of the New York legislature, when, confronted by a great shortage of houses and consequent rapidly rising rents, the legislature contented itself with the enactment of a series of drastic laws in regulation of rentals, which brought about some temporary relief so far as existing buildings were concerned but naturally enough failed as an incentive to build more houses.

At the special session of the legislature convened to consider the housing situation, these rent laws—their limitations having been widely recognized—have been reinforced by radical measures designed to stimulate house building. Permissive exemption from local taxation of new dwellings begun within a specified period, for a term of years, was the principal one of these measures. But neither this nor, for the matter of that, any other form of subsidy to building can be made sweeping, undiscriminating or self-executing in character without serious danger to the state. Some administrative body must be charged with the duty of determining whether each proposed dwelling is of a character to deserve the taxpayer's special consideration—or the very success of the new legislation will be the measure of its potential harmfulness.

What the state wants is not merely more houses; it wants more houses of a certain standard of acceptability—as to sanitation, as to light and air, as to surroundings, and as to artistic merit. The state has enough houses below that standard now. The successful stimulation of a hasty, state-wide building campaign would, if the building were not controlled, bring relief from a temporary difficulty by greatly augmenting a permanent one. And outside of its largest cities, the state today imposes absolutely no regulation upon dwelling house construction.

It was with a view to all of the foregoing considerations that the State Reconstruction Commission, in its report on housing conditions, submitted to the Governor last March, placed in the forefront of its recommendations the proposal that the state establish permanent local housing boards, to be appointed in each community of ten thousand of more people, and a central state housing agency to coordinate and render effective the work of the local housing boards. It was proposed that the members of these boards be unpaid, and that their initial functions be as follows:

Aiding each locality in meeting the immediate pressing need for sufficient homes.

Collecting and distributing information relating to housing and community planning.

Assisting in the preparation of housing laws, zoning ordinances, state-wide regulatory or restrictive housing and building codes, etc.

Studying the means of lowering the cost of housing through better planning and construction of homes and through their proper location.

Development of a means for using state credits to apply to housing at low rates of interest without loss to the state; setting the standards for the use of such credits and fixing limitations upon the return of money borrowed from the state for housing purposes, so that its use shall assist in the most practical manner possible in the erection of adequate homes in wholesome environments for workers, at a rental cost dependent on the actual cost of land and building. This work to be preparatory to the final passage of a constitutional amendment permitting the extension of such state credits (which amendment formed the second of the commission's recommendations).

A bill providing for these proposed housing boards was introduced at the regular session but failed of passage. Redrawn, it was again introduced at the special session, but, although it was put forward as a part of the program of the Joint Legislative Committee on Housing and has at all times

XUM

had the hearty support of the Governor, its fortunes at this session were no happier than the last.

The bill provided for local housing boards, each consisting of not more than nine members, to be appointed by the respective mayors of the communities affected, and their appointment made mandatory. The state advisory housing board, to consist of five members, was to be appointed by the Governor, and placed in the Department of Labor.

The duties of the boards, which are prescribed in detail, follow in general the lines suggested by the Reconstruction Commission in its report, but are even broader in their scope. The functions of the local boards may be described as falling into three classes, educational, advisory and supervisory. In the first class are requirements dealing with the collection and dissemination of information as to housing and town planning, the study of local housing needs, and the rendering of reports to the state board. In the second class are the prescribed duties of assisting in the preparation of local ordinances in relation to housing, zoning, etc., and the development within a prescribed period of a plan in contemplation of the probable future growth of the city with its surrounding territory, and providing for the appropriate location of residential, industrial and business sites. In the third class is the requirement for the approval by the local board of all plans for the erection or location of any houses erected by the municipality or with the use of its money.

The duties of the state advisory housing board comprise the supervision and direction of the work of the local boards; the compilation of the data locally collected; the study in all their aspects of the problems connected with housing; the recommending of legislation; assistance and advice to municipalities, public offices, etc.; the preparation of a report on the best means of extending state credit in aid of the building of low priced houses; and finally, the approval of all houses as to both character and location, for the building of which the state shall lend its credit, or as to which it shall relieve the owner from taxes.

From the point of view of housing as a complex and permanent problem, it is not too much to say that the enactment of such a measure as that just described would be of great and lasting importance to the state. Its effects would be, in all likelihood, permanent, widespread and of controlling importance, for it furnishes a basis—a foundation—on which can be built a consistent, far-sighted and beneficent housing policy for the state.

Diffused throughout all parts of the state as these housing boards would be, and forced as they would be to study the problem with the consciousness of responsibility, the effect of their study could not fail to be promptly and widely educational. The reaction of such wide-spread study upon future legislation would be as certain as it would be wholesome. Such a group of responsible local boards, functioning collectively under the guidance of a central state body, would not only speedily begin to mould public opinion through the mere performance of their required duties, but would in a short time be prepared to bring to bear on state and local authorities a weight of expert official advice on matters pertaining to housing and community planning that could with difficulty be disregarded. With such a governmental organization in existence, no future legislature could face the housing problem without having at least the benefit of sane, well considered counsel from its responsible official advisers.

By centering responsibility upon these boards for the administration of all state-wide measures passed in aid or regulation of housing, and of loans by municipalities, the state would go far toward assuring itself of lasting benefits from legislation that otherwise might be highly detrimental. All the good of such legislation could be preserved by enlightened administration, and the evil effects minimized or avoided. Not the least of the benefits to be looked for from this measure would be the series of town plans that would be forthcoming, covering every considerable community in the state. That would have to be done carefully and with forethought which has hitherto been done carelessly and at random, and for the first time it could be said of an entire state that it had no large community without a definite plan for its own future development. Most important of all is the consideration that these boards in the years to come would assure New York State of an authoritative source of opinion upon all matters connected with housing—a source of opinion that would make itself felt throughout the state.

Who can doubt that the result would be a more widely extended realization that since environment strongly affects character, a far-sighted commonwealth will take care that all its children shall be reared, so far as may be, among surroundings that will give them at least the opportunity to grow up physically, mentally and morally straight?

Radium

A New Element in the Safety Movement

RADIUM, the most mysterious and most powerful element known to science, which has the greatest power of all discovered sources of energy, has now been linked with the safety movement and will lend its power to the prevention of avoidable accidents. So great is its power that one gram is sufficient to raise a ton of water from the freezing point to the boiling point. If one ton of it were harnessed to a ship equipped with 1,500 H.P. engines, the ship would be propelled at the rate of 15 knots an hour for thirty years.

Radium is best known to the world through its curative properties in the treatment of cancer and through its commercial value in making radium luminous material.

Radium's role in industry as a life saver is less spectacular, but perhaps even more important than it is as a therapeutic agent. The great mass of accidents in factories, in mines and in other industrial institutions where darkness is a creator of danger, are being eliminated through the newest invention of science—radium luminous material. Radium illuminated watches are familiar articles. The same material that illuminates these is now being employed in great factories on all power line switches where fumbling might mean electrocution to the operator.

High pressure gauges, which are installed as an insurance against dangers, are deprived of a great deal of their safety value through inconstant lighting. Their dependability as indicators is increased tremendously through making them safe 24 hours a day by the application of radium luminous material, which is invariably luminous in the dark. Steam gauges and water gauges of all sorts are making use of radium to increase safety.

Electric switches are often set in places which are unlit. This includes electric lighting equipment which is usually visible only after the light it controls has been turned on. A spot of radium luminous material on the bottom of switches makes them easily located in the dark, so that in emergency they may quickly be made use of.

Likewise, a fire alarm or a fire extinguisher is deprived of a good deal of its efficiency through being invisible in the dark. Radium luminous material acts as a quick locater for them. Telephones which are often necessarily found quickly in the dark in emergencies, various emergency call bells, and revolvers are made more useful through the application of undark. Gun sights, illuminated, insure accuracy of aim in the dark. The need of luminating poison bottles, so that they may stand out warningly in the dark has been demonstrated too often to need further dwelling on. An interesting safety device is the safe combination whose dial is radium luminated, so that no artificial light need be used for it.

The industrial uses of radium luminous material are many. Bolts that are necessarily attached to the dark under-portions of machines and equipment are being touched with dabs of this luminous material with a consequent great saving of bloodshed. In mines where the carrying of oil lamps or the placing of electric lighting equipment is not feasible, radium has been found to be a boon to humanity. There are dark corners in the dark underground channels which miners must traverse, corners where danger lurks—these are made safe through the unvarying luminosity of radium.

The value of radium to mariners is commencing to be recognized. Not only the compass dials, but the steering wheels, the gauges and other instruments which should be instantly and uninterruptedly visible have been touched with radium. Motorists, motor cyclists and the operators of any machinery which has indicating dials, or gauges which tell of the speed of the motor or the quantity and mixture of fuels and oils, are finding the solution of their difficulties in radium luminous material. The hazard of uncertainty has been reduced.

While radium is the most valuable element in the world—a gram of radium, which is about a thimbleful, costs $120,000, as opposed to $150 for an ounce of platinum—so powerful is it when mixed with other materials that even the minutest particle is effective in making material self-luminous for years. It is this quality which makes radium luminous material commercially possible.

The great value of radium is due to its scarcity, and to the great difficulty in isolating it after it has been found. Much of the radium of the world is now found in America, in carnotite fields. A great portion of this comes from the Undark Radium mines in the Paradox Valley of Colorado.

The ore is found in narrow seams in the ground. It is sorted and packed in one hundred pound sacks and transported sixty miles to the nearest railroad station on the backs of burros and mules. Thence it is shipped in carload lots 2,900 miles across the continent to an extraction plant in Orange, N. J.

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Two hundred fifty tons of ore treated with an equal amount of chemicals and water yields one grain, which is about the size of a pin head.

The power of radium lies in the penetrating character of its rays, which disintegrate and travel at the rate of 3,000 miles a quarter of a second.

In addition to the use of radium luminous material on machinery in industrial plants, it is used extensively for the marking of any corner or spot which should be visible in the dark. Angles of tables and chairs, corners in rooms, numbers to indicate cubby holes or doorways on which there is no other illumination are touched with a spot of undark. Even the valuable electric torch increases its efficiency when it has a touch of radium on it so that it can be reached instantly in an emergency in the dark.

When other lights fail, when fuses blow out, wires break down—radium will glow dependably without danger of explosion or of burning.

The employment of radium to help solve our medical and industrial problems of life safety is as yet in the first stages of its development. What the future will bring no one knows, but radium will doubtlessly become increasingly useful.

Criticism and Comment

Dynamic Symmetry and Its Reviewer

The Editors, THE AMERICAN ARCHITECT:

THE review on Jay Hambidge's epoch making book on Dynamic Symmetry and the Greek Vase, recently published in *The Nation,* is so misleading and so unsatisfactory to all who have studied this subject with care, that, in the interest of truth and justice, some further discussion of its importance is desirable. Instead of reviewing the theory of the Dynamic Symmetry, its value and application in practice, the reviewer contents himself with assailing its nomenclature and by simply asserting that the whole subject is an old one, but now presented under a new name for the purpose of confusing the reader. A greater injustice to a worthy subject which is not alone absolutely new in the sense that it was lost two thousand years ago and has been forgotten, but is really important, has not to my knowledge appeared in print for many years. The reviewer not alone condemns the nomenclature but proposes substitutes, such as "rectangles 'A and D' etc., instead of 'root rectangles' and the 'whirling square'." To the present writer and to several friends who practice the Dynamic system in their respective branches of art, these substitutes appear childish, pedantic and tiresome, and remind us of a schoolmaster with his official textbook, both intent upon making the subject they teach as unpleasant and as uninteresting to the pupils as possible. The nomenclature used by Hambidge seems not only entirely appropriate, but the very terms are stimulating and help to encourage the reader to proceed.

As regards the value and application of the rediscovered symmetry of the Greeks the reviewer says as little as possible, either for or against, leaving the reader to assume that it is as useless as the nomenclature. The fact, however, is quite different. When Mr. Hambidge began his lectures on his discoveries in New York some three years ago, some of his pupils began to apply the new rules of symmetry to their own work, and a year later held exhibitions of such works so to enable the public to judge to their value. One of these exhibits was held in the rooms of the Architectural League, the other in Columbia University, both arousing much interest. The very fact that all who use the system in a practical manner agree that their work has been greatly benefited by the new theory, should prove to the reviewer that it possesses, not alone some, but really great, value. And does it not appear strange to the reviewer that Professor Caskey, of the Boston Museum of Art, should have gone to the immense trouble of measuring hundreds of Greek vases and permit Hambidge to publish these drawings, diagrams and measurements, unless he was fully satisfied that the theories of Hambidge were correct? As an archaeologist with some knowledge of art as a fundamental base for study, the present writer has found the re-discovered symmetry of the classic Greeks of the very greatest importance, and even now it is quite evident that in this system the scientific students of Art and Archaeology possess new means by which to judge the classical arts. The system not only explains satisfactorily (never done before) the cause of the superiority of the Greek art over that of the Latin, but it also gives the means by which we may determine the genuineness of many classic works of art which are now doubtful, because the Roman copyists of the older works had no knowledge of the subtle Greek symmetry and made necessarily conspicuous errors in their work when reproducing them. This we can now discover by measurements, just as we can discover if a vase is based upon the dynamic system or not. And furthermore the knowledge which this system fur-

nishes permits us to date correctly many objects which formerly could not be dated properly, because it is known that the system became lost and forgotten at the end of the first century A. D., the last objects based upon it being two altars in Pompeii. All objects based upon this system must thus be earlier than that date. A knowledge of the system permits us to restore with a greater degree of truthfulness, than it has until now been possible, many classic works of sculpture and architecture, and we may now point out with certainty the errors of older restorers who knew nothing of the system. If to these qualities of the new system we add that it is applicable to every conceivable art—painting, sculpture, furniture making, ornamental designing, the designing of coins, the designing of monumental and minor buildings, pottery making and glass manufacturing, etc., it will be seen, or should be seen by all not prejudiced, that the newly re-discovered Greek System of Symmetry is of very great importance.

New York. GUSTAVUS A. EISEN

LOGGIA IN HOUSE OF GEORGE E. CRANMER, DENVER, COLORADO

J. B. BENEDICT, *ARCHITECT*

For other illustrations of this house, see preceding issue

Anecdotes of English Architects

UNDER the heading of Architectural Causerie, there are presented to the *Architects' Journal* of London the following reminiscences:

In the eighteenth century it was customary to publish every telling incident connected with the lives of artists; not a little amusement was in this manner provided for a rainy day, as can be judged from a quiet perusal of the works of Walpole, Smith, Cunningham, and a host of others. We can pass over such attempts at wit as the following, "Design for a Ballroom by Dance," or "The Planning of a House by Chambers," to enjoy one or two time-honored stories of the men of genius who contributed so much interest to the reign of the Georges.

* * *

Sir William Chambers, who shared Sir Joshua Reynolds' appreciation of literature, very justly observes "that it must not be imagined that buildings, considered merely as heaping stone upon stone, can be of advantage, or reflect honor either on countries or particular persons. Materials in architecture are like words in phraseology, which, singly, have little or no power, and may be so arranged as to excite contempt; yet, when combined with art and expressed with energy, they actuate the mind with unbounded sway. A good poet can move even with homely language; and the artful disposition of an able architect will give lustre to the vilest materials, as the feeble efforts of an ignorant pretender must render the most costly enrichments despicable. The progress of other arts depends on that of architecture. When building is encouraged, painting, sculpture, gardening, and all the other decorative arts flourish as a matter of course, and these have an influence on manufactures, even on the minutest mechanic productions; for design is of universal advantage and stamps a value on the most trifling performances, the consequences of which, to a trading people, are too obvious to require illustration." The above statement, although a trifle sententious, will perhaps serve to make clear Sir Thomas Jackson's recent outburst in the public press. It is certain that never at any time like the present have the kindred arts been reduced to such impotence among the commercial assets of the country.

* * *

When Sir Christopher Wren built the Church of St. Magnus, London Bridge, there were houses on each side of the bridge, which projected as far as the church. When these houses were pulled down the footpath came directly against the church, so that the passengers on that side were obliged to go round into the coach road. This was found very inconvenient, and a meeting of the inhabitants was held to consider if they could with safety cut a road through, which was thought too hazardous an expedient, as it was apprehended that any such interference with Wren's work might bring the church down about their ears; in consequence the scheme was shelved. A second meeting was afterwards held, when it was determined by a small majority to make the experiment. The workmen, on breaking through the wall, found a complete and perfect arch, which Sir Christopher, foreseeing with prophetic taste that the houses would at some future period be pulled down, had left in its present form. Sir Christopher, with all his sagacity, could not foresee that his Church would one day be threatened with demolition by the ecclesiastic authorities, or doubtless he would have provided against the contingency—not by leaving a single arch, but a whole court of arches.

* * *

Architects as a body are not prone to shed tears when asked to act against their better judgment. However much they feel inclined to express annoyance, it is generally held to be polite to stifle emotion and to preserve an attitude of Oriental stoicism. Sir Christopher Wren encountered many difficulties when he was engaged upon the rebuilding of St. Paul's. Charles the Second, who posed as a patron of the arts, allowed his brother, the Duke of York, afterwards James the Second, to negotiate with Wren regarding the addition of side oratories to the architect's original plan, which to Wren's mind disturbed the simplicity of his work. Sir Christopher, aware of the ultimate effect of this ill-considered project, and guessing at the Popish inclination of the Duke, could not refrain from shedding tears in speaking of the frustration of his purpose. The Duke laughed at the architect's tears, and insisted that his, the Duke's, commands should be obeyed, so poor Wren had to recast this part of the design and issue instructions anew to Master Strong.

XUM

On the Green, Plymouth, Conn.

(See reproduction of original drawing by O. R. Eggers on opposite page)

RURAL New England abounds in picturesque small towns, all laid out with orderly care. Each has its spacious common, or city park bordered on four sides by stately elms, through the dense foliage of which may be seen well designed white houses with green shutters. In these white houses, in many instances, there have lived, from the time of earliest settlement, families whose members have figured in all the town's activities. As a rule one side of the Commons was set apart as location for the meeting house, the town hall, the school and other village buildings.

Mr. Eggers has sketched with his usual fine perception of the architectural essentials, that section of the village green at Plymouth set apart for the church, with its stately colonnade and the adjacent school house. More and more each year do these fine old New England villages attract a class of people who best appreciate the quiet restfulness that residence in them affords. And it is good to know that these new residents soon imbibe the same reverential attitude towards the traditions of the place that form a religious part of the everyday life of the older inhabitants.

The commercialism of a period that until recently menaced the safety of these old towns and their locally historic buildings is now giving place to a feeling of deep respect. The evidence is to be found in the solicitous care of these old structures and a correct protective attitude toward them.

ON THE GREEN, PLYMOUTH, CONN.
THE AMERICAN ARCHITECT Series of Early American Architecture

EDITORIAL

The Question of Joint Registration

IT is extremely fortunate that the meeting of the Board of Directors of the American Institute of Architects was timed to accord with the National Council of Architectural Registration Boards held in St. Louis, November 18 and 19. It was possible for the directors of the Institute to consider without loss of time the report of the joint committee of engineers and architects on the proposed joint registration law and emphatically and clearly to state just what was the board's attitude on this important question.

The bill, as originally formulated by the engineers for a joint "Board of Registration for Engineers, Architects and Land Surveyors," has been and is even now being actively promoted by the engineering profession. It was inconceivable that architects would concur in such a law, and so emphatically had disapproval been expressed at the recent convention that it was finally decided to redraft the proposed law.

But the redraft contains the same objectionable elements, inasmuch as it omits to remove the fundamentally objectionable features of a reservation to each profession of the complete control, not simply of examinations, but also of registration and the withdrawal of certificates.

The following telegram, sent by President Kendall of the Institute to Engineering Council, setting forth the attitude of the Board of Directors, is timely and exactly to the point:

Secretary, Engineering Council:

The American Institute of Architects in past conventions is on record cordially favoring co-operation with engineering societies but opposing joint legislation for state registration. The National Council of Architectural Registration Boards, now in session, has, by unanimous vote, expressed its opinion that joint registration boards are not desirable for the best interests of either profession. The joint registration bill just received by the Board of Directors will, however, receive the most careful consideration and action at next convention. In the meantime, where simultaneous legislation has already been initiated, Institute members will endeavor to obtain laws which will secure to each profession independent action and control of examination and issuance of registration certificates. The Institute regrets premature publication in architectural press of joint committee report before it was received by the directors and trusts you will not assume the report of a committee is the action of the Institute.

By this prompt action the matter becomes at once clarified and set on the road to a conclusion that will be equitable and therefore satisfactory to both professions.

Morals and Architecture

THE effect of their surroundings upon people has within the last few years been more and more elaborately developed until there now exists a well defined group of people who contend that environment is a greater force in individual, and hence group culture, than those inherited instincts that form the basis of education. Whichever be the greater, it is true that surroundings produce a subtle influence for good or ill according to their worth.

Architects more than any other group, may be influential in creating surroundings that in their effect will be wholesome and salutary. While it is undoubtedly true that the client who draws the purse strings must be pleased, it is also true that wholesomeness is not dependent on large expenditures. Many clients require only the stimulation of an architect's enthusiasm for his ideals to see their justice—especially when they are not costly. In the instances where clients are obdurate, a dignified publicity is helpful. Letters to the newspapers and co-operation with the city welfare departments are welcomed. If the newspapers were given opportunity to discuss really progressive things of this sort, there would be less room for much of the useless scandal and frivolity that now finds space. Discussion, publicity, not of the architect, but of the ideal, is what is desired.

In bank architecture there is a tendency toward rectilinearity and solidity, as representing the honesty and straightforwardness of the activities within. In church architecture, the Gothic upreaching toward the nobility above our city sordidness, reveals the striving of man for something finer.

In every business, in every undertaking which re-

XUM

quires housing, there are the meaner aspects and the nobler. Architects have the opportunitity insistently to accent the nobler, and make it almost impossible for any other phase to be carried on within.

On any plane of development it is possible to respond to the highest art. It has been wrongly inferred that the child and the race begin with the clumsy and imperfect, and grow gradually toward perfect art. But a simple folk song is as perfect art as a Beethoven symphony. A baby waves a goodby with a grace and beauty of arm and hand movement which a well trained actress cannot equal. Nature does not make one kind of sunshine for children and another for adults, although their respective reactions may differ. The appreciation develops to its fullest extent, but it is there with its influence at all times.

AMONG the chiidren of the wealthy, the neighborhood schools are usually good examples of architecture. Among children of the poor, in their crowded miserable districts, the schools reflect that sordidness. Instead they should be especially fine, to compensate for the total lack of harmony in which these children, unlike their more fortunate contemporaries, are brought up. For there is no other source for them to acquire relief from indefinable restlessness that overtakes them.

The subtle influence of good architecture is inevitable. From a proper proportioning of a building may be sensed proper proportion in other things. In the harmony and stability, the refinement and the dignity of a good building, may be learned a love for those same elements in all things.

But why do we leave these lessons to be learned by chance? The architect constantly struggles against indifference on the part of the layman. Indifference if not actual ignorance. While there is a yearning for beauty, its cultivation has no present place in the curricula of the school. A certain amount of craftsmanship, of so-called vocational training, is offered; or perhaps a meagre and thoroughly useless course in freehand drawing. But no *appreciation,* no knowledge of the history or the ideals of the arts. Even the colleges urge it not. One may have a perfectly good B.A., even M.A., and never have seen the inside of a picture gallery. As for architecture, the college professor is prone to regard it as a musty, dusty outgrowth of archeological findings, with no relation to modern building, and no bearing upon the mind in its making.

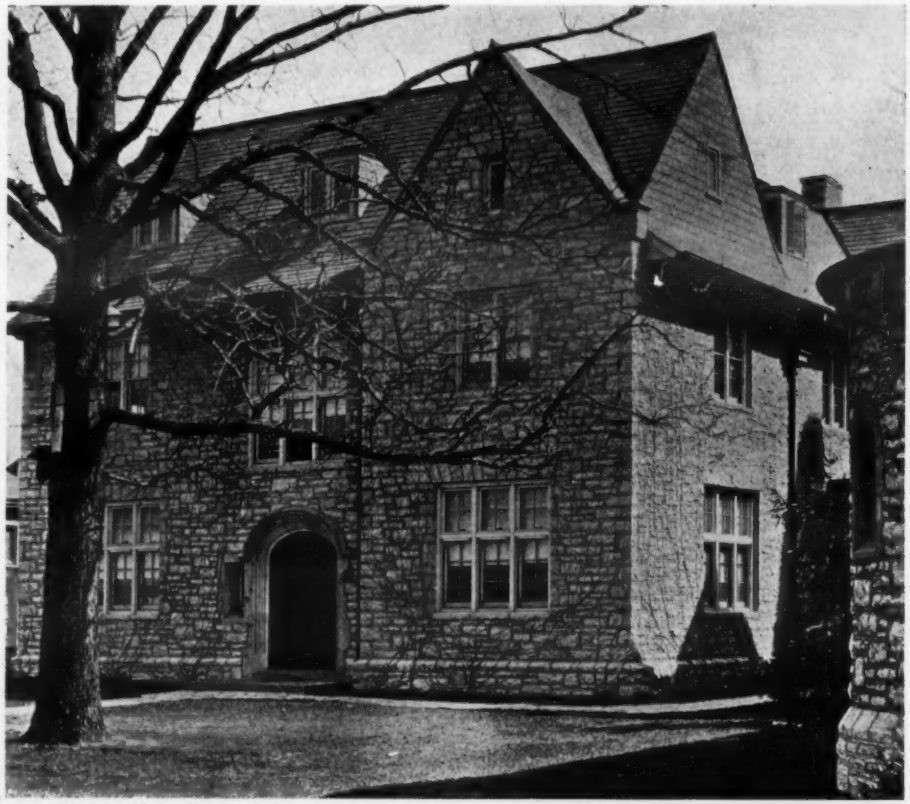
Yet with all the discussion of environmnet, it is time that our architectural surroundings were taking their place in the mind of the layman. Many worthwhile efforts in this direction are being made. The architectural verities as presented in moving pictures is one instance, but again an indirect and unconscious method, whose prime purpose is not to teach, but to amuse.

The matter is one for serious consideration; one in which organized architecture might assume the initiative and constructively move to insure that the layman shall be properly instructed as to what is good art, and to insure that the method of such instruction shall be along practical lines that will afford the largest measure of good result.

DECORATION, CHURCH OF THE CARMINI, VENICE

CHURCH OF OUR LADY OF LOURDES, ST. LOUIS, MO.
STUDY & FARRAR, *ARCHITECTS*

TRANSEPT



THE PAROCHIAL RESIDENCE

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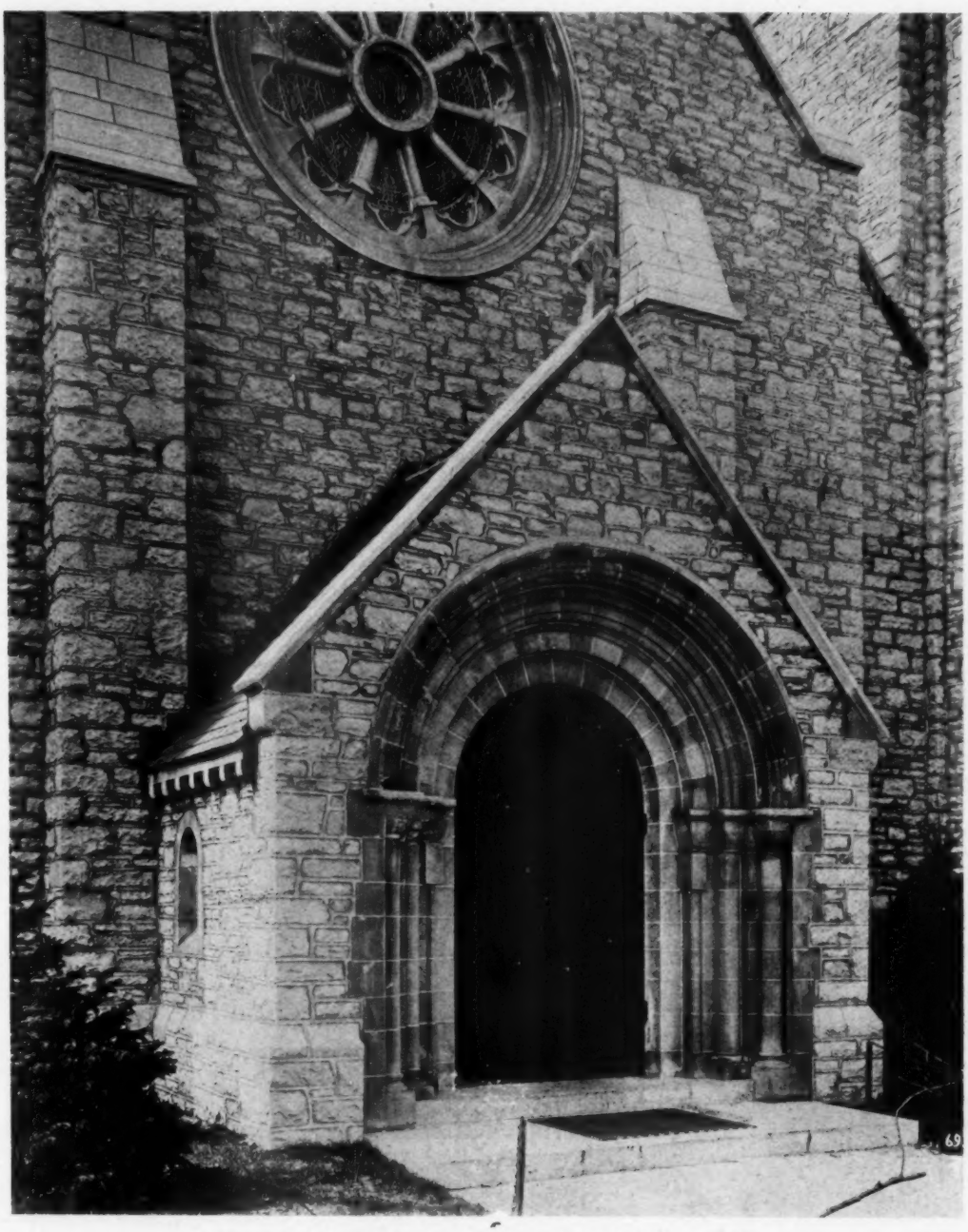
STUDY & FARRAR, *ARCHITECTS*



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STUDY & FARRAR, *ARCHITECTS*

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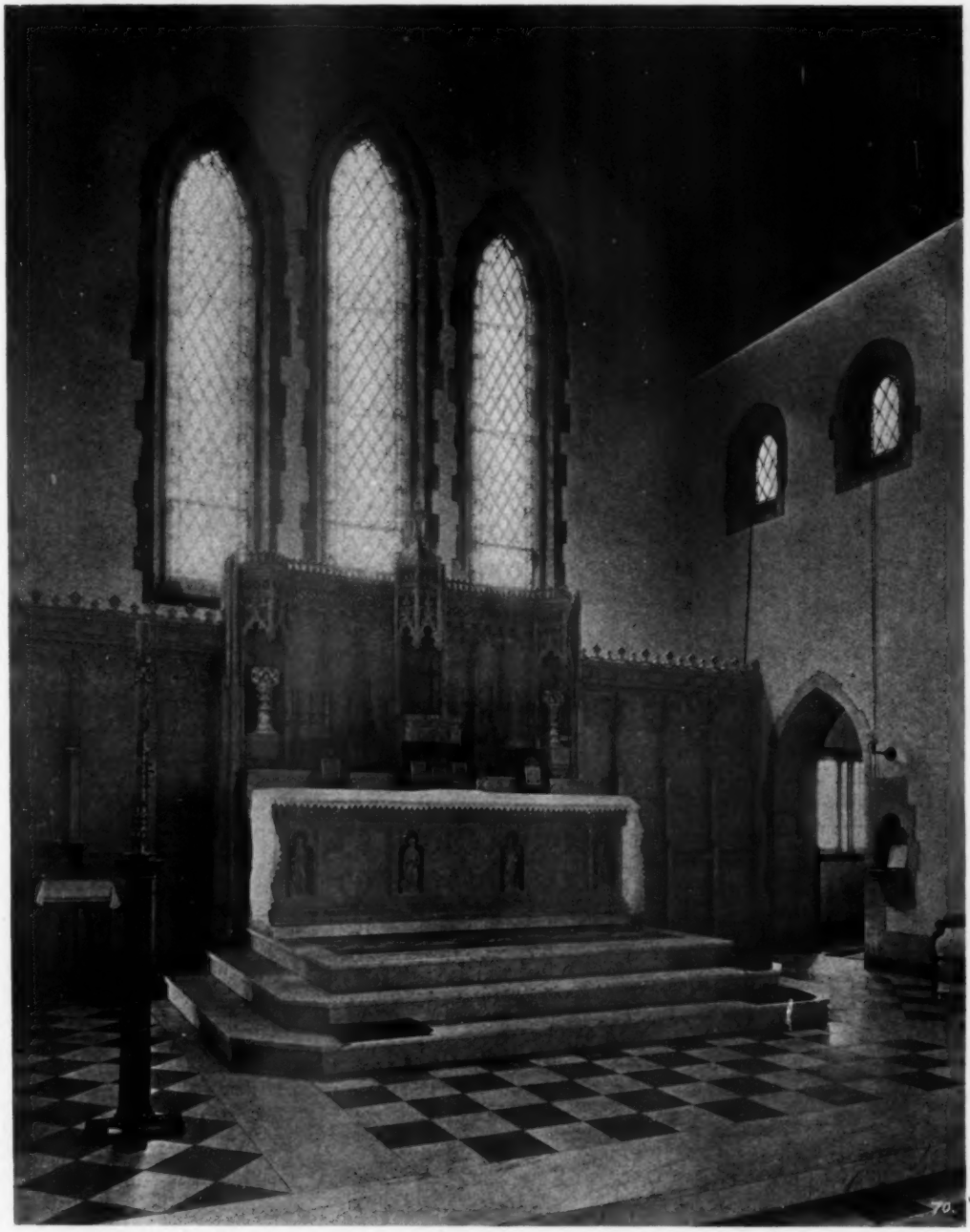

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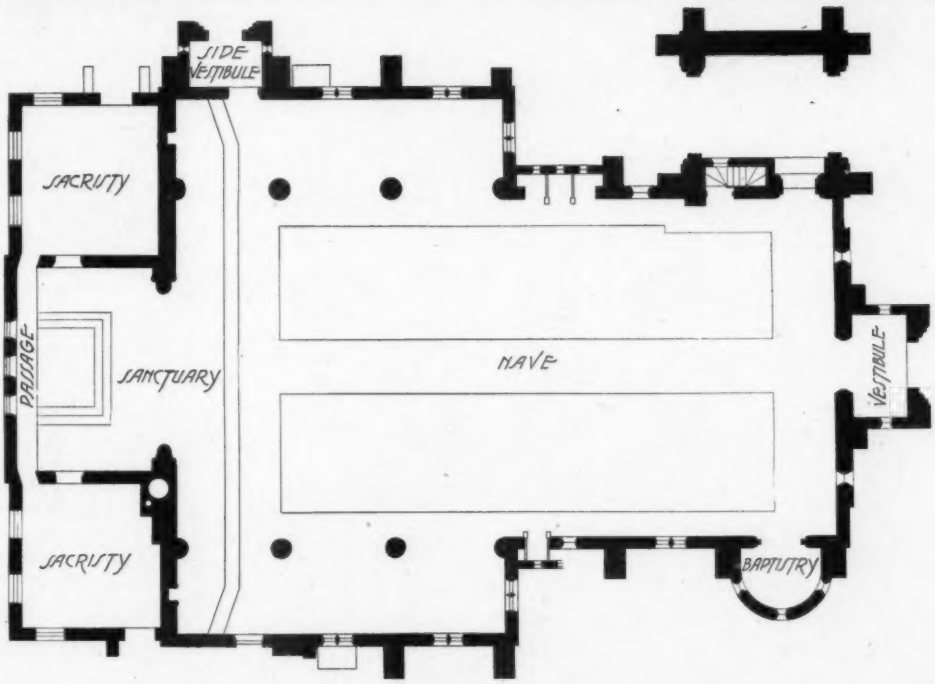

CHURCH OF OUR LADY OF LOURDES, ST. LOUIS, MO.
STUDY & FARRAR, *ARCHITECTS*

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HOUSE OF GUIDO DOERING, ST. LOUIS, MO.
GUY STUDY, *ARCHITECT*

HOUSE OF GUIDO DOERING, ST. LOUIS, MO.
GUY STUDY, *ARCHITECT*

HOUSE OF GUIDO DOERING, ST. LOUIS, MO.
GUY STUDY, *ARCHITECT*

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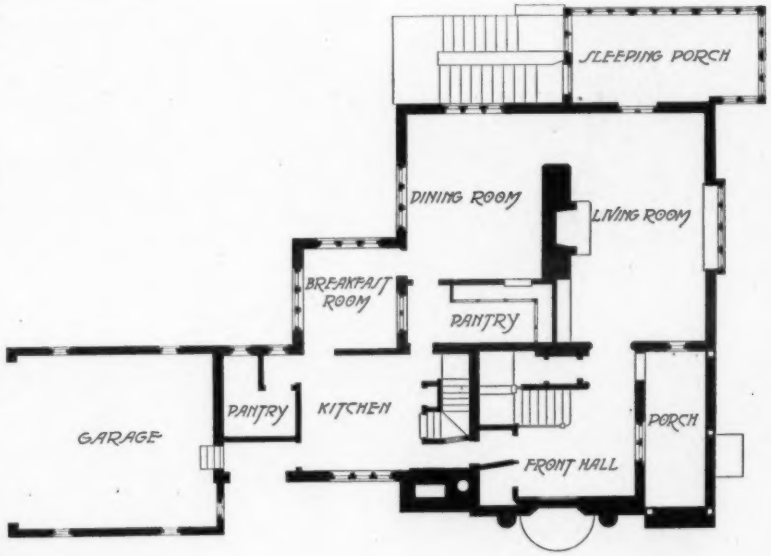

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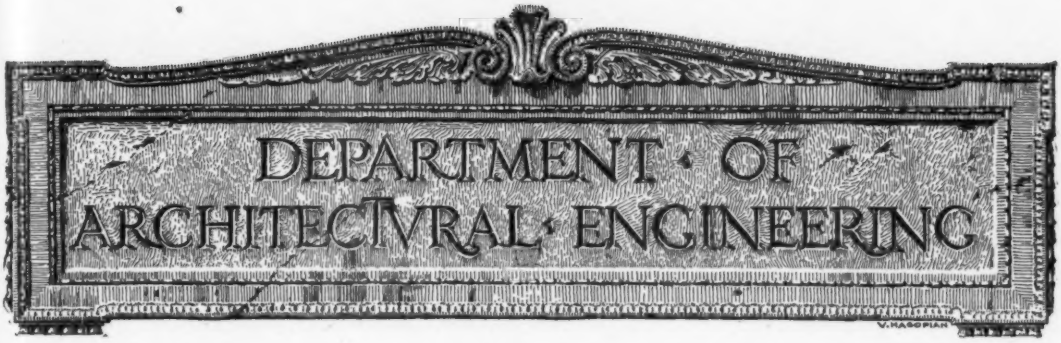


Heating and Ventilating Industrial Buildings Part—II

Forced Hot Water Heating

By CHARLES L. HUBBARD, *Heating Engineer*

A SYSTEM of heating well adapted to shops and factories, and one that has been extensively employed for this purpose, makes use of hot water under a forced circulation. This system has two principal advantages over steam heating, the first and most important being on the score of temperature regulation, as it is possible for the engineer to vary the temperature of the water so as to supply any quantity of heat necessary to warm the buildings under varying outside weather conditions. This is of great importance, both as regards the comfort of the operatives and also in relation to economy of operation, especially where live steam is required to any extent for heating purposes.

The second advantage relates to the matter of grades, and may have considerable weight against steam, in certain cases, especially if the condensation is to be returned to the boiler or receiving tank by gravity without the use of traps.

The modern factory is usually built of brick or concrete without a basement, which brings the boiler room on the same level with the main shop. As much of the radiation must necessarily be placed beneath the windows, the boiler will be too high for a gravity return unless a portion of the boiler room is excavated to a lower depth. This not only adds to the expense, but a pitted boiler is less convenient to care for, both as regards firing and the removal of ashes. In case the boilers are run high pressure, for power purposes, and the condensation returned to a closed receiving tank, only the pump and receiver need be placed in a pit, which is not objectionable. However, with forced hot water, no attention need be paid to grades and the return pipes may be carried at the ceiling above the coils as well as below them in many cases, which is often much more convenient where there is no basement and the floor is concrete.

The arrangement of the radiation, together with supply and return piping is practically the same as for steam so far as pipe sizes and general layout are concerned. A circulating pump takes the place of the suction pump of the vacuum system, but a special heater is required, which is an additional piece of apparatus not needed when the circulating medium is steam. The system in its simplest form is shown in diagram in Fig. 1 and consists essentially of a pump, heater, and distributing mains and branches for connecting these with the radiators and coils.

Pumps. The centrifugal or turbine pump, driven by a direct-connected motor, steam turbine or engine is best adapted to this work. In plants generating their own electricity the motor drive is usually more economical and is commonly employed for day service. This, however, in most cases, should be supplemented by a steam turbine or engine for night use or at such other times as electric current is not available. The head or pressure against which the pump must operate is due simply to the friction of the water as it flows through the pipes and coils, and in a properly designed system, should not exceed 40 or 50 feet "head." In case of the medium size buildings under consideration this is commonly limited to 20 or 30 feet, except in work connected with central heating where a number of

XUM

buildings are supplied through underground mains.

Table I gives working data for a standard make of centrifugal pump adapted to this particular class of work, and includes working or friction heads ranging from 6 to 50 feet.

Under ordinary conditions the efficiency of a centrifugal pump falls off considerably for heads above 30 or 35 feet, but multi-stage pumps are constructed which work with a good efficiency against 1,000 feet or more. With favorable conditions an efficiency of 60 to 70 per cent. may be obtained, but

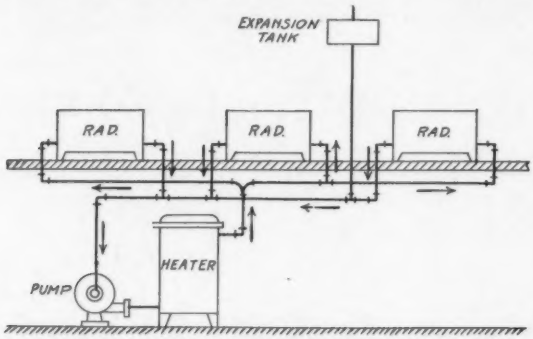


FIG. 1. A SIMPLE SYSTEM ARRANGED FOR FORCED HOT-WATER HEATING

for hot-water circulation it is more common to assume an efficiency of about 50 per cent. for the average case which is that taken in Table I.

TABLE I.

Diameter of Delivery inches	Gallons discharged per minute	Revolutions per minute for friction heads from 6 to 50 feet										Horse power per foot lift
		6	8′	12′	16′	20′	25′	30	35′	40′	50′	
2	100	440	500	600	700	780	860	950	1020	1090	1210	0.063
3	240	420	470	570	640	710	780	850	910	970	1080	0.136
4	430	380	430	510	580	640	710	770	820	870	960	0.217
5	730	330	360	430	490	530	590	640	680	720	800	0.309
6	1050	300	330	390	400	480	530	570	610	650	720	0.446

EXAMPLE—What size and speed of pump will be required to circulate 240 gallons of water per minute against 25 feet friction head? What speed and horse power will be required?

Looking in Table I we find that a pump with a 3-inch discharge will handle this volume of water, and that for a 25 foot head the speed must be 780 R. P. M. The horse power required is 0.136 per foot lift or a total of 25 x 0.136 = 3.4.

If the volume of water and the head vary materially from the quantities included in the table, so that values cannot be interpolated, the following formula may be used for approximate results:

$$H.P. = \frac{H \times G}{2{,}000}$$ in which

H = friction head in feet; G = gallons pumped per minute; and H.P. = horse power required.

The gallons of water to be pumped in any given case may be obetained by the formula $G = \frac{R \times E}{500 \times T}$ in which

G = gallons to be pumped per minute.

R = square feet of radiation to be supplied.

E = efficiency of the radiating surface, which may be taken as 250 for direct coils under average conditions.

T = drop in temperature of the water in passing through the system, commonly taken as 20 deg.

Making a computation for 1 square foot of radiation, we have $G = \frac{1 \times 250}{500 \times 20} = 0.025$ (very nearly) or 0.025 gallons of water must be circulated per minute for each square foot of surface in the radiating coils.

Heaters. When power is purchased from a central plant and steam is not required for manufacturing purposes the water may be heated in an ordinary boiler the same as for a system operating under gravity circulation. The usual type of cast iron water boiler is adapted to this work for plants within their capacity, and beyond this, tubular boilers, without steam space, and provided with baffle plates for equalizing the flow of water over the tubes, may be used. If more than one boiler is required, they are usually so connected that the water may be passed through them either in "series" or in "parallel" as desired. This is shown in Fig. 2. By closing valves *A, A, A* and opening all boiler connections wide, it is evident that all of the water will pass through each unit, one after the other. On the other hand, by simply throttling these valves (*A, A,*

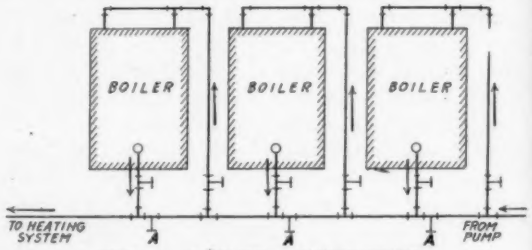


FIG. 2. BOILER CONNECTIONS

A) a portion of the water will pass through each boiler and back into the main. For the full heating capacity the water should be passed through the boilers in series, as first described, while for quick regulation of temperature, more or less of it may be by-passed by opening the valves in the main accordingly.

In most industrial plants, however, steam is required for power purposes so that it is desirable to utilize the exhaust, which is done by heating the water in tubular heaters similar to those employed for feed-water heating.

If more heating capacity is required, it is better to supplement the exhaust with live steam than to use a special water boiler. Live steam heaters are preferable to hot-water boilers for two principal reasons; first, the temperature of the water is under better control, and second, because high-pressure steam boilers are available either for power or heating purposes. Hot-water boilers, on the other hand, should be in duplicate to guard against accident, and must, in any case, be laid off during the summer, thus adding to the cost of equipment over that when steam alone is used. When there is sufficient exhaust to do the entire heating for a greater part of the time it is usually best to admit the live steam, as needed, directly to the exhaust heater through a pressure reducing valve, thus employing only one heater and making the action entirely automatic.

When the proportion of live steam is large, it is best to use a separate heater, supplied with boiler pressure, and placed in series with the exhaust heater. The condensation from this heater is usually returned to the boiler by gravity as this arrangement proves more economical in operation, owing to the tendency of water at a high temperature to break into steam when trapped to a pump receiver which is vented, thus passing off to the atmosphere as waste heat. If the pressure in an exhaust heater is always maintained above atmospheric pressure the condensation may be trapped to a hot-well or vented receiver from which it is pumped back to the boiler with the other drips and "make-up" water. If, however, the pressure is likely to fall below atmospheric a pump must be connected directly with the heater for draining it. In most plants of small and medium size, where it is desired to keep the equipment as simple as possible, it is customary to set the reducing valve on the live steam connection so as always to maintain a pressure sufficiently above the atmosphere to drain the condensation from the heater directly to the general receiving tank or hot-well.

The heaters employed for this purpose are similar to the ordinary feed-water heater, and in fact pratcically any standard make in which the water passage is equal to or greater than the area of the heating main, may be employed. The form in which the water is *inside* the tubes or coil is preferable owing to its greater efficiency which makes it possible to use a considerably smaller size.

The rate of heat transfer between the steam and water varies principally with the difference in temperature and the velocity of flow, and, under ordinary working conditions, will range from 200 to 300 heat units per square foot of surface per hour per degree difference between the temperature of the steam and the *average* temperature of the water.

Assuming the initial and final temperatures of the water passing through the heater to be 180 and 200 degrees respectively, the average will be $\frac{180+200}{2} =$ 190 degrees. The temperature of steam at 2 pounds

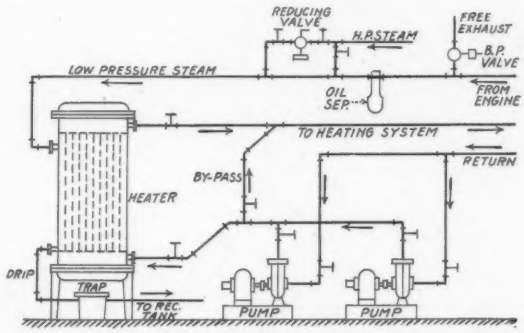


FIG. 3. PUMP AND HEATER CONNECTIONS FOR A SYSTEM USING A SINGLE HEATER

gauge is 220 degrees. Hence, the temperature difference between the steam and water will be 220 — 190 = 30 degrees. With a transfer of 250 heat units per degree difference, this will give a total of 250 x 30 = 7,500 heat units per square foot of tube surface per hour. If the radiation from a direct coil is 250 heat units per hour, then 1 square foot of tube surface in the heater will supply 7,500 ÷ 250 = 30 square feet of direct radiation. If a drop of 40 degrees were allowed in the temperature of the water passing through the system, then the temperature difference would be 40 degrees, and the ratio would become $\frac{40 \times 250}{250} = 40$. While this would make it possible to use a smaller heater, the size of the radiators would have to be increased to make up for the lower average temperature of the water passing through them, so that the actual cost of installation would be greater than before.

In case of a live steam heater used in series with an exhaust heater, the efficiency of the tube surface will, of course, depend upon the work done by the exhaust heater and the pressure carried on the boilers.

For example, suppose there is enough exhaust steam to do one-half of the work, that is, raise the temperature of the water from 180 to 190 degrees; also by means of high-pressure steam it may be raised to a temperature of 240 degrees, which cor-

responds to a steam pressure of 10 pounds. This will give an average water temperature of $\frac{190+240}{2}$ = 215 degrees. If a boiler pressure of 120 pounds is carried, the steam temperature will be 350 degrees, giving a difference of 350 − 215 = 135 degrees between the steam and water. With this greater difference in temperature we may assume a somewhat higher rate of transmission per degree

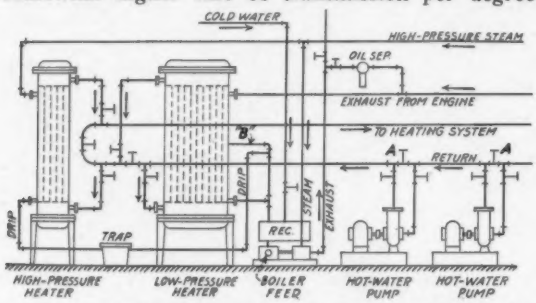


FIG. 4. SYSTEM USING LIVE AND EXHAUST STEAM HEATERS

difference, which we will take as 270 instead of 250. Hence, we have a transmission per square foot of surface per hour of 135 x 270 = 36,450 heat units, or nearly five times greater than before. If it is desired to do all of the work with the live steam heater in case of repairs to the exhaust heater, or for other reasons, then it should be given 1 square foot of tube surface for each 36,450 ÷ 250 = 146 square feet of direct coil radiation. If it is only to be used for supplementing the exhaust heater, that is doing one-half the work. Then 1 square foot of tube surface will supply 146 x 2 = 292 square feet of radiation.

Pump and Heater Connections. These are best shown by simple diagrams. The simplest arrangement, employing a single heater, is shown in Fig. 3. Two pumps should always be used, each capable of doing the entire work, as the system is useless without the pump. These, in Fig. 3, are so connected that they may be used either independently or together in parallel.

The temperature of the water sent to the heating system is varied by by-passing more or less of it past the heater by use of the valve in the by-pass.

In case the water temperature is reduced in this way any surplus exhaust steam will be discharged outboard through the back-pressure valve, while the live steam supply will be shut off before this, automatically, by means of the reducing valve.

The condensation in this case is trapped to the pump receiver, the reducing valve being set so as always to maintain a pressure in the heater of 1 or 2 pounds gauge.

A system employing both live and exhaust steam heaters, is shown in Fig. 4, which also gives additional piping details. In Fig. 3 the pumps are in "parallel," that is, they may be operated together, each doing half the work, but no increase in pressure can be obtained in this way. In the arrangement shown in Fig. 4, they are in "series," and while they may be operated independently, as before, the water may be passed from one pump into the next by closing valves *A A*, thus practically doubling the pressure. This is often a convenience when it is desired to circulate the water at a high velocity for quick warming in the morning or in extremely cold weather. The heating main is so connected beyond the pumps that either heater may be operated separately or they may be run in series, the water first passing through the low-pressure unit and then through the high-pressure. The exhaust heater drains directly into a closed pump receiver, from which the condensation is pumped back to the boilers.

The drip from the high-pressure heater is *trapped* into this same receiver and any water which breaks into steam under this lower pressure flows up the pipe *B* into the low-pressure heater and is utilized instead of being wasted through a vent pipe. Cold feed or make-up water is drawn from the city mains into this same tank and pumped into the boilers with the condensation.

Another arrangement where the drip from the high-pressure heater is returned directly to the boilers by gravity is shown in Fig. 5. When the height from the water line to the bottom of the heater is

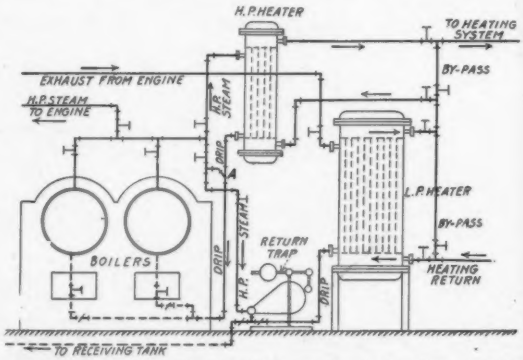


FIG. 5. ARRANGEMENT USING BOTH LOW AND HIGH PRESSURE HEATERS

less than 10 feet, a live steam connection should be made with an injector tee in the return, as shown at *A*, to overcome the drop in pressure in the heater under heavy service. Variations in water temperature are secured by throttling the steam supply to the heater, which reduces the pressure and allows the condensation to collect and partially submerge the

tubes, thus reducing their efficiency. The condensation from the low-pressure heater is discharged into the general receiving tank or hot-well by means of a *return* trap, which will work equally well whether the pressure in the heater is above or below atmosphere.

Systems of Piping. There are a number of different systems of piping employed in forced hot-water heating, and various combinations of these, according to circumstances, but only enough will be shown to give a general ideal of the principles involved. A

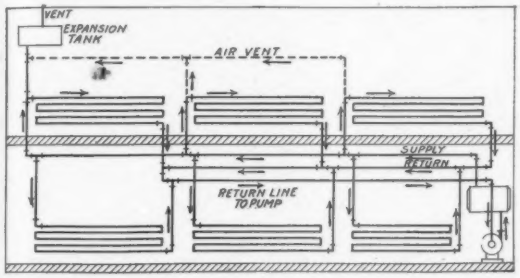


FIG. 6. DIAGRAM OF PIPING SYSTEM, SHOWING TYPICAL ARRANGEMENT FOR A TWO-STORY SHOP BUILDING WITHOUT BASEMENT

typical arrangement for a two-story shop building, without basement, is illustrated in Fig. 6. In this case the supply and return mains are carried near the ceiling of the first story, the coils on the upper floor being connected for an *upward* feed and those on the lower floor for a *downward* feed, as indicated by the arrows. In any system of hot-water heating the matter of air-venting is an important factor and must be provided for with great care.

As air is lighter than water it naturally finds its way to the highest points of the system, and these must be vented either automatically or by means of pet cocks opened at frequent intervals by hand.

In the arrangement shown the air liberated in the lower coils rises through the supply connections against the downward flow of water, passes into the supply main, then upward through the supply risers to the upper coils, from the tops of which it is taken off through small air vents (shown dotted), which, in turn, connect with a pipe line leading to the expansion tank, which is open to the atmosphere. By using this method there are no pockets in the system and the air is discharged automatically without the use of pet cocks. In following out the pipe lines it will be noticed that the supply and return mains run in the same direction and that a "return line to pump" is brought back from the extreme end of the line, without radiator connections. This arrangement is for the purpose of equalizing the flow by making the length of the circuit through each coil practically the same. That is, starting at the pump, it will be found by inspection that the distance to any coil, through the supply and back to the pump again through the return, is very nearly the same in each case. If this were not so there would be short-circuiting through the coils nearest the pump, while the circulation through those at the end of the line would be very weak or lacking entirely. This condition is sometimes overcome by the use of throttle valves in the connections, but it is better so to design the piping as to equalize the resistance as much as possible and only resort to throttling when necessary.

Valves are usually placed in the supply and return connections of each coil for cutting it out in case of repairs, and one of these may be used for throttling if this is required in any special case.

The system shown is known as the "open system," which means that the expansion tank is placed above the highest coil and is open to atmospheric pressure. This system is commonly used where only a low-pressure heater is employed and where the maximum water temperature does not exceed the boiling point at atmospheric pressure (212 deg.). If the building were only one story in height, without a basement, the pipe connections would be identical with those shown for the first story coils. If there were a basement, the supply and return mains would probably be located there and the arrangement would be the same as though the first floor coils and their connections, in Fig. 6, were omitted.

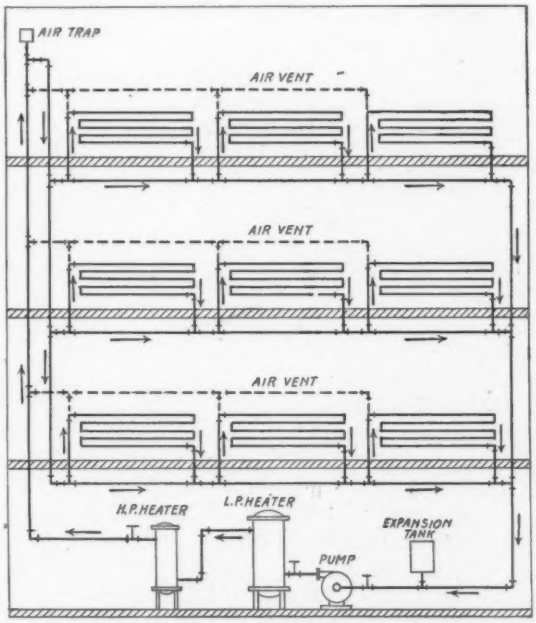


FIG. 7. RECOMMENDED ARRANGEMENT FOR A BUILDING THREE STORIES OR OVER IN HEIGHT

A good arrangement for a building, three stories or more in height, is shown in Fig. 7. In this case a high-pressure heater is used in series with the low-pressure, so that a water temperature is carried considerably above 212 degrees. Here an open expansion tank cannot be used because the water would boil if exposed to atmospheric pressure. This arrangement requires a closed tank, which will be described in detail in connection with Fig. 8. The supply main (Fig. 7) first passes directly to the top of the building, where it is provided with an automatic air vent for keeping the system clear of air. This is simply an inverted float steam trap and operates independently of pressures or temperatures. The main supply "drop" is taken from the riser near the top and is carried back to the basement, as shown. The supply for each story is taken from this and carried just below the floor, with the supply and return connections for the coils both connecting with the same pipe.

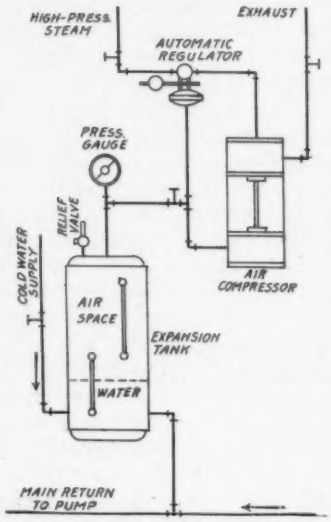


FIG. 8. TYPICAL ARRANGEMENT OF EXPANSION TANK AND AUXILIARY EQUIPMENT FOR A CLOSED SYSTEM

A typical arrangement of the expansion tank, and its auxiliary equipment for a closed system is shown in Fig. 8, in which case a constant air pressure is maintained in the upper part of the tank, above the water, by a combination of relief valve and automatic air compressor. When the water expands, due to a rise in temperature, the air in the tank is compressed and a sufficient amount escapes through the relief valve to prevent the pressure from exceeding the maximum desired. A fall in the water level reduces the air pressure, which is at once made up automatically by the compressor.

Additional water is admitted from time to time, as needed, by means of city pressure or a small pump under hand control.

Size of Mains.—The size of the supply and return mains leading from and to the circulating pump is based on the quantity of water to be handled and the length of run. The method of computing the gallons of water to be moved by the pump per minute has already been given, and Table II shows the velocity of flow in different size pipes for varying quantities of water; also the corresponding frictional resistance per 100 feet length of run, expressed in feet "head."

For ordinary work the velocity should not, in general, exceed the following figures:

TABLE II.

Sizes of hot-water mains and velocities of flow, with friction head per 100 feet:

Dia. of Pipe Velocity of flow in feet per minute	2-inch		2½-inch		3-inch		4-inch		5-inch		6-inch	
	Gallons	Friction head	Gallons	Friction head	Gallons	Friction head	Gallons	Friction head	Gallons	Friction head	Gallons	Friction head
180	29	2.0	46	1.6	66	1.4	118	1.0	184	0.8	264	0.7
240	39	3.4	61	2.7	88	2.3	157	1.7	245	1.4	352	1.1
300	49	5.1	77	4.1	110	3.4	196	2.6	306	2.1	440	1.7
360	59	7.2	92	5.7	132	4.8	236	3.6	367	2.9	528	2.4
420	69	9.5	107	7.6	154	6.4	275	4.8	428	3.8	617	3.2
480	79	12.2	122	9.8	176	8.2	314	6.1	490	4.9	706	4.1
540	88	15.2	138	12.2	198	10.1	352	7.6	551	6.1	794	5.1

TABLE III.

Dia. of Main in inches	Maximum Velocity feet per minute
2	200
2½	250
3	300
3½	350
4	400
5	450
6	500

It has also been stated that the total friction for the circuit, from the discharge outlet of the pump to the suction inlet, should not exceed 40 to 50 feet, while 20 to 30 feet is better for small plants.

The method of using these tables is best shown by working a practical example.

Example.—A factory building contains 3,000 square feet of direct radiation in the form of circulation coils. The length of the circuit is approximately 1,000 feet. What should be the diameter of the mains connecting with the pump?

Gallons of water to be circulated per minute $= 0.025 \times 3{,}000 = 75$.

Looking in Table II we find that a 3-inch main will discharge 110 gallons per minute at a velocity of 300 feet, with a friction head of 3.4 feet. As this friction is for 100 feet length of pipe, the total head of 1000 feet will be $3.4 \times 1{,}000 \frac{1{,}000}{100} = 34$ feet.

As both the velocity and friction head are within practical limits, this size pipe may be used.

The horse power for driving the pump will be $\frac{34 \times 75}{2000} = 1.28$.

Modification of Zoning Ordinance

THE rapid spread of the Zoning—or more properly City Planning—idea throughout the United States, as indicated by the appointment of commissions in many cities to study conditions and present reports on which such ordinances may be based, as well as the actual adoption of zoning ordinances by quite a few cities, is an indication of the soundness of the principle involved.

THE PLAZA HOTEL, NEW YORK CITY
WARREN & WETMORE, *ARCHITECTS*
This photograph shows the building as it appears at present.

However, after the adoption of such a restricting ordinance, no matter how carefully worked out, many individual cases will appear in which a strict enforcement of the ordinance would seem unjust. In cases of this nature somebody capable of granting modifications must take action. The deciding of these cases is of the utmost importance, and it is essential that a careful investigation of all the facts be made, in order that the rights of adjoining property owners, as well as those of the appellant, may be properly safeguarded.

THE PLAZA HOTEL

An interesting case in which the New York Board of Appeals granted an important modification of the height regulations related to the Plaza Hotel, located at the southwesterly entrance to Central Park. From the facts brought out at the public hearing on this case, it appeared that prior to the adoption of the zoning ordinance, the Plaza Operating Company, owners of the hotel, had acquired property adjoining the hotel to the west and fronting 25 ft. on 59th street and 160 ft. on 58th street. The owners' intention in purchasing this additional land was to enlarge the hotel.

Warren and Wetmore, architects, were commissioned to prepare plans for this addition, which was done, a tower being incorporated in the design. The conditions created by the war were given as the reason why no effort had been made to proceed with the work in 1916 in accordance with this design. When plans were finally placed on file with the Building Department, approval was refused on the ground that the height proposed exceeded that permitted by the zoning ordinance, which had come into force in the interim.

In this instance part of the property is located in a one and one-half times and part in a two times height district. The existing building is 265 ft. high, or 65 in excess of the height that would be permitted for a new structure. The main portion of the proposed addition (as designed) will be 20 stories, the same height as the present hotel. Evidently due to the pleasing appearance of the existing building, and its important location, and desiring in

ROW OF FOUR-STORY AND BASEMENT HOUSES ON SOUTH SIDE OF FIFTY-EIGHTH STREET, OPPOSITE THE PLAZA HOTEL
The house at the left is the Vanderbilt residence.

no wise to detract from the appearance of the general scheme, the Board of Appeals decided to permit the excess height.

While on the 59th street front, which faces Central Park, it would seem that no criticism of this action could be made, yet it is questionable as to how far such modifications should go on a street like 58th street, where the width (60 feet) is moderate. Of course, so long as existing conditions remain, i. e., 4-story and basement structures located

WESTERLY END OF FIFTY-EIGHTH STREET FRONTAGE OF PLAZA HOTEL, SHOWING EXISTING CONDITIONS AT SITE OF PROPOSED ADDITION

opposite, there will be ample light, air and ventilation, but should the property directly across the street be later occupied by a structure built to the height limit permitted, it would seem that the tall hotel structure would not only have less light than the law intended, but that the new building opposite would also be deprived of that light and air which the zoning ordinance sought to guarantee it in advance.

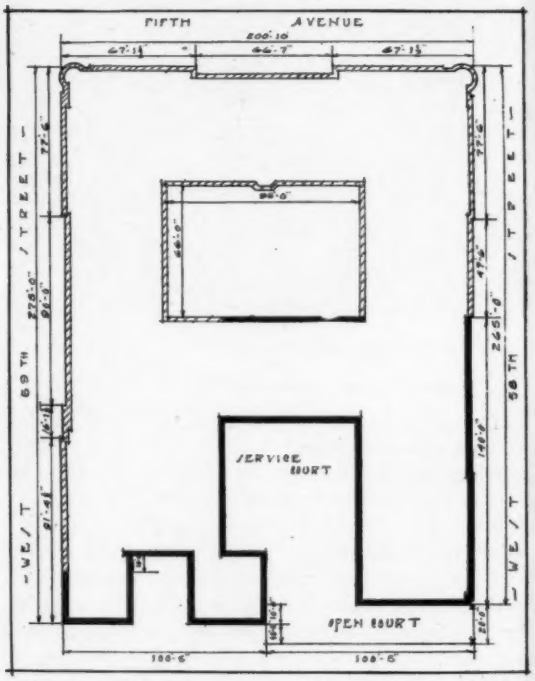
The resolution adopted in this case states in part:

"Whereas, under the plans submitted and accompanying this application it is evident that an existing nuisance, namely, the delivery of coal and hotel supplies, etc., on the 58th street sidewalk would be abated, as the appellant is creating an interior service court on his own property; and

"Whereas, there would be undue hardship in preventing applicant from completing the building in accordance with these plans and this building being of monumental type and in a very prominent position, at the juncture of one of the main avenues and Central Park, the full spirit of the zoning resolution is better observed by carrying the proposed extension on the present lines of the building than by substituting other lines in the upper stories of the structure;

"Resolved, that the Board of Appeals does hereby *make a variation* in the application of the height district regulations of the building zone resolution, and that the application be, and it hereby is *granted."*

The elimination of the delivery entrance for coal mentioned in the resolution in itself would hardly justify a variation of the height rules. There is no doubt, however, that the action of the Board permits a better architectural treatment of the 58th street façade. The accompanying photographs and drawings illustrate the existing conditions and proposed improvement.



DIAGRAMMATIC FLOOR PLAN, PLAZA HOTEL

Hatched walls indicate existing structure. Solid black walls indicate proposed addition.

Current News

Happenings and Comments in the Field of Architecture and the Allied Arts

Fifth Avenue Association Makes Awards

Prizes for the best work in beautifying Fifth avenue during the year were awarded by the Fifth Avenue Association at its Twelfth Annual Dinner as follows:

Gold medal for best new building, 24 West Fifty-seventh Street Company, for their new building erected at 24 West Fifty-seventh street, Buchman & Kahn, architects.

Silver medal for second best new building, Douglas L. Elliman & Co., Inc., for their new building erected at 15 East Forty-ninth Street, Cross & Cross, architects.

Gold medal for best altered building, Guaranty Trust Company, of New York, at 522 Fifth avenue, Cross & Cross, architects.

Silver medal for second best altered building, Edward I. Farmer, at 15 East Fifty-sixth street, Trowbridge & Ackerman, architects, Lawrence Barraud, associated.

The prize winners were selected by the Committee on Architectural Harmony of the Fifth Avenue Association.

Nature Models in Clay

In the clay beds of the valley of Connecticut are found curious concretions, specimens of which, sent to England, excited the interest of the Royal Society as long ago as 1670.

These concretions appear in four principal types: disk-shaped, cylindrical, botryoidal (resembling grape-clusters), and irregularities, some of which strikingly suggest imitations of animal forms. A remarkable fact is that each claybed has a form of concretion peculiar to itself, and the principal types are never found intermingled in the same bed.

The beds are composed of stratified, river-drift clays, or "Champlain" clays.

Belgian Organization for the Construction of Cheap Homes

An intensive campaign for the construction of cheap homes has been begun in Belgium on the initiative of an organization known as La Société Nationale des Habitations et Logements à Bon Marché, which has a capital of 100,000,000 francs and which is under supervision of the State. In Antwerp 125 of these habitations have just been completed in the populous quarter of Looibroek, due to the intervention of the communal authorities. This is regarded merely as a beginning. The city is arranging to procure the necessary space for the construction of 1,000 other houses with the aid of the Société Nationale.

About 80 local organizations already are in process of formation, and it is figured that before long much will have been accomplished toward the solution of a problem greatly aggravated by the destructions due to war. The Société Nationale is at the same time making experiments with material, apparatus, and processes of construction. It has constituted for this purpose what is termed a Comptoir National des Matériaux to facilitate the acquisition by officially recognized societies and at advantageous terms of new material and economical processes of building.

Experiment grounds are to be established in a number of regions, notably Brussels. These will permit inventors, manufacturers, architects, and contractors to come there to build habitations, develop theories of construction, or simply to carry out certain interesting ideas.

The Société Nationale will participate, if necessary, in the expense of these experiments. Certificates will be delivered participants. The organization makes an appeal to American specialists who would help in solving the living problem in submitting material and apparatus and ways of improving hygienic, economic, and esthetic conditions of popular and cheap homes. Requests for participation in the experiments should be addressed to the Director Général de la Société Nationale des Habitations et Logements à Bon Mache, 56, rue de Spa, Brussels, Belgium.

Safety Congress in Syracuse

A survey of the net results of the intensive safety campaigns conducted in New York state along the lines of promise and performance will occupy much time at the fifth Industrial Safety Congress, which will be held in Syracuse, N. Y., Dec. 6-9, under the direction of the State Industrial Commission. Safety problems will be taken up each day by men who are

charged with putting into practical operation the various plans worked out by experts to promote safety in industry.

Moving pictures, tableaux, pageants will be employed to demonstrate safe and unsafe practices.

In conection with the Congress will be held a safety exhibit, in which will be seen practical demonstrations of unsafe conditions and practices and suggested remedies.

Industrial Commissioner James M. Lynch is president of the Congress. Edward W. Buckley of New York is secretary.

London Astor House to Be Sold

The most unique office building in London, for more than a quarter of a century the business headquarters and home of the late Lord William Waldorf Astor, is to be sold. Built at a cost of more than $1,000,000 this office-palace occupied one of the most commanding positions on the famous embankment.

Architects have called it the most original structure of its kind in the world, in that it combines many of the inspirations of the old world with all the modern devices of present-day business. It is constructed of gray stone, in Tudor style and never has any building offered such discouragement to burglars. A strong, though artistic railing surrounds the house, all the many windows have iron bars and entrance can only be obtained through a massive gateway of bronze.

Above it all is a little gilt galleon, in full sail, an exact model of the caravel in which Columbus crossed the seas, a happy reminder, as someone has pointed out "of the American-made wealth which made the splendid building possible."

When one enters the offices he is confronted by a magnificent carved staircase which occupies the greater portion of the center of the house. Oak beams, mahogany panelling, marble floors abound throughout and many of the fittings have been declared priceless by experts.

The house holds many rare treasures. Among the most important are the folio Shakespeare, the first edition of Spencer, a 16th century book of colored maps, many inlaid tables and cabinets and a ponderous fourposter bed with Gobelin hangings.

Although used as both a residence and office, several enthusiasts are urging that it be purchased by the city of London as a permanent home for the London City Museum, so well could it be adapted to public use.

The first Lord Astor spent much of his time in the building, managing his American properties from here and directing his newspaper, The Pall Mall Gazette. After his death, the volume of business to be transacted became less and the present Lord Astor having no use for the building it is to be sold, but will always be a monument to the memory and personality of the late William Waldorf Astor.

Cement from Dead Sea

Ample quantities of bitumen occur in the Dead Sea region. Dead Sea bitumen was undoubtedly used in ancient times. It is evident that the walls of the temples and palaces of Babylon and Ninevah were joined with bituminous cements, and there are bitumen-lined cisterns in Syria of great antiquity which are still water-tight and fit for use.

Growing Homes

The giant edible bamboo is being introduced in some of the watery sections of the South and is expected to be of value in industry there. In Japan and the Orient this bamboo sometimes shows a growth of eight or ten inches in a single day and will reach a height of fifty feet. All by itself it can furnish food, clothing and building material. In this country it is expected to have its greatest value in furniture making, but an Oriental can build an entire home from this bamboo and live happily ever afterward. It would be practicable in Southern California, but a bamboo mansion would probably not make a hit in a New England winter.

Disciples to Build 113 Churches in the United States

Recommendations for the expenditure of $807,750 to build 113 churches in the United States were indorsed by the international convention of the Disciples of Christ. Gifts to erect churches in New Orleans, Brooklyn, Chicago, Washington, D. C., and Vancouver, B. C., at a cost of $325,000 were approved. Architects have not yet been appointed.

Protest Against Razing High Bridge

N. Y. Chapter, A. I. A. and N. Y. Society of Landscape Architects Among Many Protesting Associations

The removal of High Bridge, joining Manhattan and the Bronx at 168th street, which has been suggested by Grover A. Whalen, Commissioner of Plant and Structures, in a letter to the Board of Estimate, will be opposed when the matter comes before the board, by representatives of the American Institute of Consulting Engineers, the New York Chapter of the American Institute of Architects, the Parks and Playgrounds Association and the New York Chapter of the American Society of Landscape Architects.

Leading engineers, architects, landscape architects

and other persons interested in the city's landmarks have protested against the demolition of the bridge on the ground that it is "of inestimable value as an old and cherished landmark, and as a beautiful monument that celebrates the completion of a notable public work and honors the memory of a great engineer," and on utilitarian grounds as well.

It was argued that retention of High Bridge as an aqueduct was essential from the standpoint of the city's Department of Water Supply, while its destruction would lose to the city an important adjunct of the park system of Upper Manhattan and the Bronx and a possible means of vehicular connection across the Harlem River, midway between the far-separated existing crossings at 155th street and 181st street.

The New York Chapter of the American Society of Landscape Architects, in concurring in the suggestions made stated, in a letter written by Charles N. Lowrie, as chairman, to the Board of Estimate following the meeting:

"The society is of the opinion that an alteration to High Bridge, which will provide for the elimination of two river piers and the substitution of a single archway, is an admirable solution of the problem. By this process the channel way is clear of obstructing piers, head room is provided sufficient for any reasonable, conceivable navigation, a historic monument is preserved, and a traffic connection of great prospective value made possible between Manhattan and the Bronx of great scenic and practical value."

Concrete Window Weights Replace Cast Iron

With the increase in cost of iron, and the delay in obtaining it, substitutes are being adopted in many odd places. A California concern, for instance, is making and installing window-sash weights of concrete, reinforced with a wire loop. They are made large enough to occupy the whole weight run, one weight being made to serve both the upper and the lower sash by setting a pulley in the top and running the cord in a loop around it. This saves cord and labor as well as iron.

Vanderlip to Preserve "A Beautiful Piece of Architecture"

Frank A. Vanderlip, the New York financier, has bought the old Stephen Lawrence homestead in North Ossining, N. Y., to keep, as he expressed it, "a beautiful piece of architecture from going to pieces." It is a massive fourteen-room structure.

This purchase has no connection with Mr. Vanderlip's acquisition of the entire village of Sparta, at South Ossining, where it is proposed to build homes for teachers. The Lawrence homestead, located on elevated ground on Croton avenue, was at one time the show place of the town.

It is an old Colonial mansion, finely built, and situated in the centre of a large tract of land.

Concrete Cascades Protect Railroad Right of Way

A curious sight in the rainy season, along a high bluff in Southern California, overlooking the Pacific Ocean, is a new series of 38 waterfalls of highly conventional form, provided with concrete channel and guide walls. The purpose of these standardized cascades is not esthetic, but wholly utilitarian. A railroad on the edge of the bluff was rapidly losing its right of way by erosion, and the trouble was ended only by building a long concrete retaining wall, and opening culverts to discharge the flood waters harmlessly down the spillways into the sea.

A Way of Roses Proposed to Cross New York State

Members of the leading horticultural societies and floral clubs in the state are interested in plans to plant rose bushes along the state highway from New York to Buffalo. The subject was discussed at the meeting of the State Federation of Horticultural Societies and Floral Clubs held at Syracuse. At that meeting it was decided to make a beginning by planting rose bushes along the state road from Syracuse to Auburn. This work will be undertaken by the Syracuse Rose Society, a member of the State Federation, the Auburn Rose Society and the newly organized Skaneateles Flower Club. It is hoped also to get the co-operation of the Chambers of Commerce of Syracuse and Auburn, the Finger Lakes Association, and the department of floriculture of Cornell University, the farm and home bureaus, Pomona and subordinate granges of Onondaga and Cayuga counties.

Much of the land along the state highway between the fences and the road can, it is believed, be planted with roses. In many cases the fences themselves will afford suitable support for the bushes. The riot of color which such a scheme would produce will, it is believed, make a lasting impression upon automobilists and other tourists. Should the plan work out well after a trial between Syracuse and Auburn it can easily be extended from New York to Albany, Albany to Syracuse, and Auburn to Buffalo.

Should the Syracuse-Auburn experiment prove successful the officers and special committee of the

XUM

State Federation of Horticultural Societies believe it will be an easy matter to secure the co-operation of horticultural societies, chambers of commerce, other bodies, and individuals for an extension of the plan. Dr. Earl A. Bates, Syracuse, is the chairman.

An experiment which has been conducted for many years along the New York, New Haven and Hartford Railroad between New York and New Haven gives some encouragement to those interested in the plan of the State Federation. Along the railroad are many rocks and rough places. These spots were years ago planted with rose bushes of the climbing and other kinds. Many of the residents also have planted rose bushes along their back fences. The result in the summer is a glow of color that is the wonder and delight of the travelers and commuters along the N. Y., N. H. & H.

Hunger and Want, But Order in Russia, H. G. Wells Says

Conditions in Petrograd were summarized in one phrase, "Hunger and want, but order," by H. G. Wells, in London, from a recent visit in Russia. He implied that similar conditions prevail throughout Russia.

In conversation with a representative of the Daily Mirror, of London, Mr. Wells said he had a chat with Nikolai Lenine, the Russian Bolshevik Premier, and went about freely without a guide in Petrograd and Moscow as well as other places. He said he was able to see and judge things for himself, but declined to give any general conclusions because his observations are not as yet digested. He declared he had been amused when he read of disturbances and insurrections in Russia, adding: "All that is just humbug."

Manufacturers' Catalogues Wanted

A correspondent writes us as follows:

A few days ago I received a letter from one of my former school friends in Paris, who is now a practicing architect there, and has some important work under way in connection with the rebuilding of the devastated regions. He has asked me to put him in touch with the means of acquiring catalogs of American products, and other documents that might be of use to him in this work, and it has occurred to me that a notice in your magazine, asking manufacturers to send him catalogs, might be the best means of helping one of our late allies, and at the same time developing a possible market for our products. His name is P. Perseval, Architecte D. P. L. G., 48 Rue Gassendi, Paris (XIV), France.

Electricity by Wind Power

In Sweden there is a plant which combines ancient and modern power sources in an unusual way, generating electricity by means of wind. A windmill with four 18-foot sails, making thirty revolutions a minute, produces 6.22 horse power when the wind has a velocity of 23 feet a second. The wind lifts a two-ton weight, which in its fall develops the energy to drive the dynamo. The mill produces about 4,800 kw.-hr. a year, which is used for agricultural and pumping purposes.

Personals

Hugh E. Weightman, industrial engineer and architect, has changed the firm name to Weightman & Steigeley, industrial engineers and architects. The offices are located at 21 North La Salle street, Chicago, Ill.

Joseph D. Leland, architect, is now located at 41 Mt. Vernon street, Boston, Mass. He was formerly operating at 185 Devonshire street, that city.

E. J. Ohrenstein & Hild, architects, have moved their offices from 58 West Washington street, Chicago, Ill., to 30 East Ontario street, that city.

VanLeyen, Schilling, Keogh & Reynolds, architects and engineers, are now located at 413 Genessee County Savings Bank Bldg., Flint, Mich. Their offices were formerly at 201 Walsh Bldg., that city.

A. R. Sharpe, architect, formerly located on Main street in Willimantic, Conn., is now practising at 144 Chestnut street, that city.

K. H. Sheldon, architect, formerly of Oak Park, Ill., has opened an office at 825 Harris Trust Bldg., Chicago, Ill., and desires circulars and catalogues.

Grant C. Macomber, architect and engineer, who was formerly practising at 11 Doyle Bldg., Flint, Mich., has larger and more spacious offices at 616 Genessee County Savings Bank Bldg.

Morris Whinston is now located at 116 W. 39th street, New York. Formerly practiced at 63 Park Row.

H. T. Barnham and Charles L. Hofman have formed a partnership with offices in the Chamber of Commerce Bldg., Richmond, Va.

Weekly Review of the Construction Field

With Reports of Special Correspondents in Regional Centers

SEVERE liquidation has been the order of the day in the New York Stock Exchange, and, since the Exchange can be taken as a fair gauge of the nation's money situation, it may be safely said that money is becoming less and less available throughout the nation. In the New York Herald of Nov. 16, the following appeared in the financial section.

"The 8½ per cent. renewal rate was the lowest of the month, but it was not taken as meaning that money was necessarily going to become easier in the course of the next day or two. Rather opinion was still maintained in banking circles that little ease in money will be experienced in the next month or so. As a matter of fact, no one looks for any real change until after the first of the year."

This, in the opinions of a group of financiers who met recently in New York to discuss the financial situation, is financially sound. Charles H. Sabin, president of the Guaranty Trust Company, in a statement issued at that conference, said:

"We are in the soundest financial, industrial and political condition of any important nation in the world."

As against this, it is learned that one of the largest deficits in governmental expenses in recent history will have to be met before the coming session of Congress adjourns for the Christmas holidays, according to officials of the Budget Committee who are now preparing the appropriation schedules.

All architects are aware that bankers generally blame the huge amounts of Liberty Bonds which they ascribed to as a reason for the curtailment of real estate loans, since those subscriptions removed more than $1,000,000,000 from active circulation. Now the Government is faced with another deficit, with little hope of meeting it without extraordinary measures. Under present conditions it is difficult to understand where the money will come from to restore parity on the Liberty Bonds. Until that is done, a huge amount of money, which would be available for immediate circulation, is held up by the banks, and it is this money which should be out at present in real estate loans, for the purpose of housing. Most persons are agreed that housing is a serious problem in this country. Yet money cannot be found for putting up houses, and the Liberty Bonds in the vaults of banks all over the country will remain there until parity is restored. Which, reduced to its simplest form, means simply that millions of dollars which should be available at the present moment for housing loans are as inaccessable as if they did not exist.

Architects can rightly question whether this is a "sound financial, industrial and political condition."

Judged from Senator Kenyon's recommendations regarding a number of things, it is not a sound condition. Mr. Kenyon was a member of the Senate committee which investigated the housing problem throughout the country, and on his return to Washington he proposed, among a number of other recommendations, the establishment of a Federal home loan bank, similar in its operations to the Federal farm loan bank, as a means of enabling the American people to have roofs over their heads. He called attention to the fact that the States of New York and New Jersey have tackled the housing problem, that Great Britain and France are taking action. He can see no reason why the Federal Government should not do the same thing.

There is no reason, the vast majority of architects are agreed, why it should not, but it is hardly necessary to establish a Federal home loan bank. All that is necessary is that the Government pass such laws as will compel banks to set aside a sufficient amount of their funds to meet the demands of those persons who wish to borrow money with which to build homes. In other words, to make it impossible for banks to *always* "seek the channels of highest return upon the investment," and to look forward a little to the future, without so much concern over the immediate present. Incidentally, one of the first things to facilitate such a move would be the passage of the law recommended by real estate operators which would tax exempt real estate mortgages up to $40,000. That would amply provide for the *necessary* building of *homes*.

Coincident with all this, architects feel that there should be a thorough house cleaning on the part of labor. That has already begun. The Executive Committee of the American Federation of Labor recently met with Herbert Hoover in a thorough review of the labor situation. What Mr. Hoover had to say is not so important as the fact that he was invited to the committee's session by Samuel Gompers himself. This is the beginning, let us hope, of cooperation and consultation on the part of labor on the problems facing it. It may be that labor is taking account of recent developments, such as the laying-off of 2,500 workers by the Pennsylvania Railroad, 500 by the

XUM

New York Central, and wholesale cuts in the number of working hours by industrial firms all over the country. The employer is coming into his own, with an "Increase production, or get out" slogan. One of the most significant and worthwhile features of labor's program for the next year is its stand on immigration. It intends to Americanize; and, as a first step, to restrict immigration.

It has been pointed out by several architects that one of the most important comments of the week on the building situation is that of Senator W. M. Calder of New York, chairman of the Senate Committee of Reconstruction and Production. This comment is based on a mass of information gathered by the committee throughout the country.

"Wherever we have gone," Mr. Calder said, "there seems to be a fairly general opinion that prices on building materials eventually must decline. The committee so far has found a decline in only one building material—lumber, which sold for $30 a thousand, and then advanced to $90, has declined to $60.

"As long as the Government's great loans are out, labor is opposed to reductions in wages, and the employer is opposed to reductions of his prices, I don't see much hope for heavy declines immediately, and it is doubtful if prices ever will attain their pre-war basis."

Transportation, however, has been bettered under private control. The car movement has gone up 23 per cent., and the freight carried during the first seven months of 1920 was billions of net tons more per mile than the corresponding period of the last three years. There are practically the same number of freight cars now in service, so the increase in haulage has come simply as an increase in the efficiency of labor. This increased efficiency has actually added the equivalent of at least 500,000 cars to the service of the shippers of the country.

(*Special Correspondence to* THE AMERICAN ARCHITECT.)

SEATTLE.—Stock taking will keep buyers off the building market to the end of the year and consequently there will be no incentive to discount prices as they are now being issued by jobbers. No new projects are expected until the New Year.

Fir lumber is apparently at the turning point after making recessions from the peak of from 40 to 50 per cent. and at the same time under operating costs. The key to the construction situation on the Pacific Coast as the jobbing trade views the matter is what the attitude of steel manufacturers will be. Every delegate to the convention in the east went from the Pacific Coast with the avowed determination to "smoke out" the eastern manufacturers as to what they propose to do during early 1921 as to prices of sheet metal, pipe, nails, fittings and other essentials. On their return they had no more of a definite idea than when they left, with the exception that they feel that the mills will arbitrarily decline to yield to the downward pressure. Accumulated back orders, long held-up home, apartment and office building projects and what will undoubtedly be a heavy demand through next year will be the foundation on which the mills will lay their right to privileges of continued strong prices. In proof of this Pacific Coast jobbing interests have been making some comparisons of prices of the past five and six years with those of today, and it has been found that despite the impression that prices of steel products used in the construction industry have fallen heavily many items have been reduced only 20 per cent. The attitude of the manufacturers represented at the eastern convention was one that fell little short of defiance, according to the reports brought back by coast delegates.

The stock taking period will, in the judgment of large jobbing operators in the Coast territory, have many disclosures for the owners. It will be found that there is more stock on hand than casually surmised, and that the shrinkage in the values will set serious thought into activity. On the findings of the annual Survey will depend in large part how much new buying will be done in early 1921. More would undoubtedly have been bought when the incipient price declines set in but for the caution imposed by the federal reserve banks, for which many today are devoutly thankful.

Stocks of small pipe and nails are being brought up close to normal with the demand, with a few reserves for the new building year of 1921. Three-fourths and halves in galvanized pipe are still short, but the warehouses contain more substantial equipments than at any time in the past 90 days. There are plenty of 6 and 8 penny common nails, with the 3 penny fine blue steel showing the only shortage.

There was a little price cutting by Portland jobbers during the week in pipe, but the explanation by Seattle houses was that the declines were for stock-taking purposes.

That production at the eastern mills is increasing there is now no longer any doubt here. Estimates place the increased output at 20 to 30 per cent. The attitude of mill workers seems to be that the unemployment during the next 90 days will increase, and that the sole guarantee of holding a job is to produce. The word was passed out quietly, but firmly by the Central Labor Council, representing all the allied building trades of this city, this week, that hereafter the law will be to "work, and hold your jobs." Thus organized labor on the coast has sensed the new basis, following the conviction that a union card alone will no longer guarantee steady employment.

XUM

The Associated Industries of this city, with a membership of 2,400 against 138 in 1919, is pledged to support the "American" or so-called open shop plan, and its potency in the North Coast territory is well recognized.

Warehouses are filling rapidly with brick, plaster, cement, plaster wall board and roofing, but prices are stationary. The general plan is to wait and see what the new year brings forth. Jobbers are insisting that the public be advised and educated as to how low prices can go, and that the impression that there is no bottom should be eradicated.

Lumber seems to have touched bottom. Wholesalers are refusing to sell short on today's market for December or later delivery and the larger mills will not accept orders excepting on the market at date of loading. Vertical grain flooring is $54, finish $61 to $66, drop siding $36 and dimension is stronger at $26.50 to $23.50, all basis at the mill. Shingles are stronger. Practically all the mills are down.

At its annual meeting at Seattle this week the Interstate Realty Association, comprising several states and British Columbia, determined to aid the 1921 home building projects by enactment of fair and impartial tax laws. "Through our legislative committee," the resolution reads, "we are hoping to lesson the obstacles in the way of the home builder by a study of existing tax laws in the Northwestern states."

(*Special Correspondence to* THE AMERICAN ARCHITECT.)

CHICAGO.—The Calder senatorial committee has come and gone and the varied opinions as to the cause of the building shortage in Chicago have been aired at length, yet nothing looms up on the immediate horizon to indicate any important improvement in the local building situation. Of course, it was not expected that the mere hearing of the Calder committee would do more than provide a forum for the expression of divergent views on what the best method of procedure really is, but there has been a feeling that the various moves toward peace and prosperity in the building trades would shortly result in some appreciable improvement.

Prices continue to show evidence of further weakness, the labor problem is much less acute, and the shortage of houses and apartments would indicate a very promising field for the builder, yet nothing, somehow, seems to materialize.

The dullness in the building situation may very well be summarized in the reports of the city building departments. A typical day of this week showed only 13 permits aggregating $241,000, as against fifty-four permits for the corresponding day in 1919, aggregating $1,400,000. This ratio continues to hold good for every day, as was shown in the statistics submitted to the Calder committee.

The weather has something to do with the continued dullness, but back of all this there is an elemental depression which seems to have hit all lines of Chicago industry and which is reflected in the public attitude to wait and see what is going to happen next.

The timidity of action is felt in all business and industrial lines. The average man will not buy a suit of clothes because he wants to wait to see if price are coming down a little more, and the same feeling is manifested by the prospective builders, who want to delay a month or so to see if labor and materials won't drop another notch.

In such a frame of mind, the public declines to be interested seriously in building, and dealers in lumber and materials report that though prices are being repeatedly shaded, there is no appreciable acceleration in the buying.

Calvin Fentress, a prominent Chicago investment banker, who has recently returned from a long business tour through the lumber sections of the Pacific Coast, comes back with the expression that present mill prices for lumber place it in the bargain counter class. He predicts, however, that the hoped for pre-war level in lumber will not be reached for some time—not at any rate until labor has been reduced in price and other items which enter into the selling price of lumber materially lowered.

In spite of reports such as these Chicago lumber dealers report continued dullness in practically all lines. Even the industrial uses of lumber which kept things fairly active in spite of the building shortage have not been considerably diminished, and the volume of business being done is much below the average for the past year or so.

Activity, if it exists at all, is to be found mainly in the hardwood sections, and this activity is anticipated rather than actually enjoyed. Wholesalers and mill representatives report many requests for quotations, indicating that retail handlers are low in reserve stock. Upon these inquiries is predicated the hope that the next month will show a considerable improvement in demand.

Prices for lumber in this market are just about at the levels of a week, as will be seen from the summary below:

Yellow Pine: B. & B. 1 inch, $95 to $130, depending on thickness; 2 x 4, No. 1, 10 to 16 ft length, $51 to $53; 2 x 6, $48; 2 x 8, $50; 2 x 10, $53; 2 x 12, $55; 13-16 x 3¼ b & b flat flooring, $85 to $90; 1 x 6, No. 2 common, $48 to $90.

Douglas Fir: S 4 S, in sizes up to 12 x 12, in length up to 32 feet, $65 to $70; 14 x 14, $68 to $73; 16 x 16, $72 to $75; 18 x 18, $75 to $80.

Hard Maple: Four, ¼ No. 1 and 2, $135; select, $120; No. 1 common, $100; No. 2 common, $65; No. 3 common, $32.

Birch: Four ¼ No. 1 and 2, $160; select, $133 to $138; No. 1 common, $95 to $100; No. 2, common, $60 to $65; No. 3 common, $40.

Red Gum: Four ¼ No. 1 and 2, $150; No. 1 common, $90 to $92; No. 2 common, $47.

Materials have likewise held their own in this market during the week just past. No important changes are to be noted in the principal supplies, and in none of the list is business any too brisk. Dealers in materials say that charges promiscuously leveled at them during the Calder committee hearing are entirely unfair and that profiteering has not been one of the pastimes of the materials manufacturers and dealers. When labor comes down, they say, materials can also come down.

The price list for the week on a variety of items follows:

Cement: Universal, $4 to $4.20; Lehigh, $4.20 to $4.40; Portland, $4.20 to $4.40; Bulk lime, $1.70 to $1.90.

Torpedo: Lake and bank sand, $3.40 to $4.25; crushed stone, gravel screenings, $3.40 to $4.25.

Building material men are bemoaning the lack of present buying and predicting dire things for the spring, when a sudden jump in Chicago building is confidently expected. They even go so far as to say that there may be important scarcities in some of the essential materials, which will have a tendency to drive prices upward rather than lower, as most of those who have building on the mind for spring now hope.

One of the items which they say may go higher is brick. Brick business is very dull just now, practically nothing being done. There has been some curtailment of production, while the increased operating expense during this dull season will have to be added to the price of the brick when operations open up. This, according to some of the Chicago manufacturers will mean additional costs later on.

While no important new building is now being launched, considerable interest continues in the important buildings now being finished. The skyscraper office and store building which Wrigley, the chewing gum magnate, is erecting on Upper Michigan Avenue will be ready for tenants by May 1, according to present indications. The new building of the Chicago Tribune, in the same general location, is now finished and is being occupied by the various Tribune departments. This move on the part of the Tribune was brought about by high space values in the building which the newspaper has occupied for many years at Madison and Dearborn streets. The old building, which is one of the best office buildings in Chicago, will now be bevoted entirely to office and banking purposes. It has, of late, become too valuable to be devoted to newspaper activities.

The Crerar Library building at Randolph street and Upper Michigan avenue is also nearing completion and will be occupied very shortly at rental charges which are said to set new standards for Michigan avenue frontage. The opening of the Wrigley, Tribune and Crerar Library structures marks the beginning of what promises to be a new important business district of Chicago—Upper Michigan avenue, made possible by the broadening and improvement of Michigan Boulevard, north of Randolph street. Already a movement to save Upper Michigan avenue is being launched to prevent an influx of undesirable business lines in this exclusive section.

The addition of the Hamilton Club on South Dearborn street, near Madison, is also nearing completion, giving an important extension of the space of that exclusive organization.

Outlying hotels which are nearing completion are the Plaisance at the Midway and Stony Island avenue, near Jackson Park, and the hotel being erected at North State street and Goethe street by the Hotel Sherman Company. The tentative name for this hostelry has been "The Ambassador," but a suit has been filed in Chicago courts to prevent this use of the title. The bill is being instigated by the Hotel Ambassador Corporation, which insists that the Hotel Sherman Company, by using the name, "The Ambassador," in Chicago, would unfairly reap the benefit of the good-will created by the Ambassador hotels in other cities.

Interest has been created in Chicago by the efforts of the Illinois Chapter of American Architects to have the Fine Arts Building, which is all that remains of the buildings which made the Chicago World's Fair in 1893 notable from an architectural point of view.

This building, now in sad need of repair, has until recently housed the exhibits making up the Field Museum of Natural History. These exhibits have been moved to the newly built Field Museum on the Lake front at Twelfth street, leaving the old World's Fair building a "white elephant" on the hands of the South Park Commissioners, who have no money to spend on its repair and who threaten to raze it. The Illinois Chapter of Architects, having made a survey of the building, find that with a bit of remodeling and a certain amount of attention it can be made to last a number of years. They propose that a branch of the Art Institute be installed as a proper occupant for the now historic building.